Yahoo Group Archive: ferriterodantennaexperimenters

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Date span: 2005-03-10 through 2017-08-13

Source WARC: ferriterodantennaexperimenters.YuonfBP.warc.gz

Source item: https://archive.org/details/yahoo-groups-2017-08-23T21-01-37Z-d4c217

Messages included in this PDF: 487

Yahoo replaced the domain portions of email addresses with @... in the archived messages. Characters lost in Yahoo's archived text appear as ?.

Messages are presented in ascending Yahoo message-ID order. Gaps indicate records absent from the source WARC or messages omitted from this PDF as spam.

1. Introduction

Yahoo group: ferriterodantennaexperimenters
Date: 2005-03-10 01:29:17 UTC
From: kd7jeh
Topic: 1 Message: 1

Hi to the Group,

Name here is Bert KD7JEH. I live in Idaho. Hope this group will Grow. I am will be working on a ferrite antenna project using some input from people like you. I hope to gain tips and know how to get me going on this.

Bert

2. Big Ferrite rod

Yahoo group: ferriterodantennaexperimenters
Date: 2005-04-10 23:59:09 UTC
From: kd7jeh
Topic: 2 Message: 2

Looks like not much activity here. I want to know how to post a picture of my 1" X 12" long ferrite. Anyone done this?

Bert

3. Re: Big Ferrite rod

Yahoo group: ferriterodantennaexperimenters
Date: 2005-04-14 13:07:35 UTC
From: Adam E.
Topic: 2 Message: 3

KD7JEH,

You can go to the photos section and upload it to the photos secton.
I also added a circuit and ferrite rod design suggestion to the
photos as well. I may do this also, like adding some other photos
of ferrite bars and antennas here.

Thanks for joining. Glad to have you here, how the group grows
let others know about it. Take care :)

--- In ferriterodantennaexperimenters@yahoogroups.com, "kd7jeh"
<lujan@p...> wrote:
>
> Looks like not much activity here. I want to know how to post a
> picture of my 1" X 12" long ferrite. Anyone done this?
>
> Bert

4. Uploaded picture of Big Ferrite

Yahoo group: ferriterodantennaexperimenters
Date: 2005-04-16 12:22:33 UTC
From: kd7jeh
Topic: 4 Message: 4

I just loaded a picture of 1" X 12" ferrite. I use ferrite beads glue together with Gel super glue. I plan on making a second ferrite of No. 43 beads. I will get more details out.

Bert Kd7jeh

5. Re: [ferriterodantennaexperimenters] Uploaded picture of Big Ferrite

Yahoo group: ferriterodantennaexperimenters
Date: 2005-04-19 17:02:05 UTC
From: Adam Ebel
Topic: 4 Message: 5

Bert, Thanks! I would sure would like to learn more about how to make my own. Also glad to have you on the group.
kd7jeh <lujan@...> wrote:

I just loaded a picture of 1" X 12" ferrite. I use ferrite beads glue together with Gel super glue. I plan on making a second ferrite of No. 43 beads. I will get more details out.

Bert Kd7jeh

Yahoo! Groups Links

To visit your group on the web, go to:
http://groups.yahoo.com/group/ferriterodantennaexperimenters/

To unsubscribe from this group, send an email to:
ferriterodantennaexperimenters-unsubscribe@yahoogroups.com

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6. Enhanced shielded ferrite loop for Ramsey Signal Magnet (kit)

Yahoo group: ferriterodantennaexperimenters
Date: 2005-05-09 17:38:35 UTC
From: John Stumm
Topic: 6 Message: 6

My latest shielded loop, (11" ferrite rod attached to a stock Ramsey Signal Magnet)has produced some impressive results! With my part 15 broadcaster tuned to 1700Khz, I was able to clearly pick up the tone bursts at 9.8 miles out! The AM-88 kit from Northcountry Radio I'm using is stock, (100mw) feeding a base loaded 9ft CB whip and totally legal, (I believe). The range might have been greater but I ran out of road. I brought along my CCrane twin loop ferrite for comparison. It could pick up the signal but it was barely discernable through the noise. I have proved that the Ramsey can be a real performer with a simple mod. The 11" rod I used is actually 9 - 3.5" small ones bundled 3X3. (5 bucks + shipping for 10 of 'em on ebay) The guy sells them continually. A good deal! The glued together assembly is stuffed in a piece of ¾" PVC thin wall and about 70 turns of #20 is evenly wrapped along the entire length. The shield is a kitchen stove exhaust fan screen that I rolled into a perfectly sized faraday shield. I will post a pic in photos, or there's already a bigger close-up in the loopantennas group file section. Oh yea, the receiver I'm using is just a DX-392 from RS. It has a convenient external antenna input jack that accommodates the Ramsey's output very well. Let's get this group rolling again! Chris, are you still out there?

John

7. Re: Enhanced shielded ferrite loop for Ramsey Signal Magnet (kit)

Yahoo group: ferriterodantennaexperimenters
Date: 2005-05-10 23:34:50 UTC
From: Adam E.
Topic: 6 Message: 7

Sounds really excellent! When will the project plans be out for everyone else to try out, or is this something that you may want to submit to Ramsey Electronics for an idea for an addition to an upgrade? Also I am planning in buying a Ramsey Signal Magnet antenna kit soon as possible after I get my other wanted kits from Ramsey. Wish you the best in your new project. Adam E.

--- In ferriterodantennaexperimenters@yahoogroups.com, "John Stumm" <jcstumm@s...> wrote:
> My latest shielded loop, (11" ferrite rod attached to a stock Ramsey
> Signal Magnet)has produced some impressive results! With my part 15
> broadcaster tuned to 1700Khz, I was able to clearly pick up the tone
> bursts at 9.8 miles out! The AM-88 kit from Northcountry Radio I'm
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> noise. I have proved that the Ramsey can be a real performer with a
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> I'm using is just a DX-392 from RS. It has a convenient external
> antenna input jack that accommodates the Ramsey's output very well.
> Let's get this group rolling again! Chris, are you still out there?
>
> John

8. RE: [ferriterodantennaexperimenters] Re: Enhanced shielded ferrite loop for Ramsey Signal Magnet (kit)

Yahoo group: ferriterodantennaexperimenters
Date: 2005-05-11 00:00:22 UTC
From: Stumm, John C
Topic: 6 Message: 8
Attachments: 1 described; binary payloads are missing from this source WARC

Adam,
When you buy their kit,they provide detailed instructions to wind the core for alternate frequencies. Their stock BCB loop as wound, measured about 180mh. I just duplicated the inductance on various other larger cores. The stock core is no slouch but with the longer ones, performance really picked up. I'm going to pick up some more of those rods the guy sells on ebay. He seems to have a limitless supply. I will see what the optimum inductance is for tuning the vlf band is and post it soon.
Thanks,
John

-----Original Message-----
From: ferriterodantennaexperimenters@yahoogroups.com on behalf of Adam E.
Sent: Tue 5/10/2005 4:34 PM
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: [ferriterodantennaexperimenters] Re: Enhanced shielded ferrite loop for Ramsey Signal Magnet (kit)

Sounds really excellent! When will the project plans be out for
everyone else to try out, or is this something that you may want to
submit to Ramsey Electronics for an idea for an addition to an
upgrade? Also I am planning in buying a Ramsey Signal Magnet
antenna kit soon as possible after I get my other wanted kits from
Ramsey. Wish you the best in your new project. Adam E.

--- In ferriterodantennaexperimenters@yahoogroups.com, "John Stumm"
<jcstumm@s...> wrote:
> My latest shielded loop, (11" ferrite rod attached to a stock
Ramsey
> Signal Magnet)has produced some impressive results! With my part
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> broadcaster tuned to 1700Khz, I was able to clearly pick up the
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> using is stock, (100mw) feeding a base loaded 9ft CB whip and
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> legal, (I believe). The range might have been greater but I ran
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> simple mod. The 11" rod I used is actually 9 - 3.5" small ones
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> close-up in the loopantennas group file section. Oh yea, the
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> I'm using is just a DX-392 from RS. It has a convenient external
> antenna input jack that accommodates the Ramsey's output very
well.
> Let's get this group rolling again! Chris, are you still out
there?
>
> John

Yahoo! Groups Links

9. Made a new AM ferrite antenna last night.

Yahoo group: ferriterodantennaexperimenters
Date: 2005-05-11 18:00:06 UTC
From: Adam E.
Topic: 9 Message: 9

Hello,

Last night I made a new ferrite rod antenna last night using a 4.5 inch ferrite rod that came from an old RY-611 portable receiver. I could not find the 26 gauge wire, so I used 30 gauge wire by winding 110 turns on the side of the core. I don't know what variable tuning capacitor I used for the antenna, but it covered 430 kHz to 1710 kHz, but it mainly resonated to 1540 kHz. The ferrite material is #61

I don't know if I should take 2 turns out off the rod to get up to 1720 kHz? Please let me know, also does that Ferromagnetic Core Design book from MFJ explain about ferrite rods and inductance and capacitance?

I will be taking the project apart and posting it in the pics section soon.

Thanks, Adam E.

10. Rod form factor

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-07 23:49:14 UTC
From: jpopelish
Topic: 10 Message: 10

Hello. I am a new member in this group, to get some feedback on some ideas I am working on for ferrite rod antennas. I have seen designs for two kinds of magnetic field antennas. One form uses a flat or loop coil and no core material, and the other uses a uniform cross section ferrite rod, either cylindrical or flat.

Based on little more than hand waving and imagining the flux lines passing from free space to a ferrite core and back to free space, again, it seems to me that some sort of dumbbell shaped core (large area ends, with a thinner cross section rod connecting them) would be a more optimal use of the core material.

I appreciate any insight you can offer.

I have ordered a batch of ferrite beads in two materials (850 u, 10^5 ohm*cm and 5000 u, 10^2 ohm*cm) and several sizes, to assemble test antennas. I also have a small diamond saw blade coming, so I can find out how much benefit I get from breaking the eddy curent path around the core in the higher permeability material.

I hope to build a Helmholtz type coil to prodoce an standardized excitation field so I can compare the different designs under a similar conditions. I am hoping to come up with a high gain antenna for WWVB, 60kHz, but I think the approach should work for other frequencies as well.

11. RE: [ferriterodantennaexperimenters] Rod form factor

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-09 02:07:42 UTC
From: Stumm, John C
Topic: 10 Message: 11
Attachments: 1 described; binary payloads are missing from this source WARC

Hello,
I'm not sure you're going to gain anything from a configuration such as you suggest. Uniform diameter is more likely to retain the desirable properties that a good balanced ferrite loop posseses, like deep nulls. For a more lively forum on loop antennas, try loopantennas@yahoogroups.com or go to radiolabs.com pose the question in their Q and A forum there. I'm sure Chris Justice will have an authoritive answer. He used to hang out here but I haven't heard him chime in in a while. P.S. You might check out the VLF loop on ebay that vanagon is peddling. He says its for WWVB.
Good luck,
John

From: ferriterodantennaexperimenters@yahoogroups.com on behalf of jpopelish
Sent: Wed 12/7/2005 3:49 PM
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: [ferriterodantennaexperimenters] Rod form factor

Hello. I am a new member in this group, to get some feedback on some ideas I am working on for ferrite rod antennas. I have seen designs for two kinds of magnetic field antennas. One form uses a flat or loop coil and no core material, and the other uses a uniform cross section ferrite rod, either cylindrical or flat.

Based on little more than hand waving and imagining the flux lines passing from free space to a ferrite core and back to free space, again, it seems to me that some sort of dumbbell shaped core (large area ends, with a thinner cross section rod connecting them) would be a more optimal use of the core material.

I appreciate any insight you can offer.

I have ordered a batch of ferrite beads in two materials (850 u, 10^5 ohm*cm and 5000 u, 10^2 ohm*cm) and several sizes, to assemble test antennas. I also have a small diamond saw blade coming, so I can find out how much benefit I get from breaking the eddy curent path around the core in the higher permeability material.

I hope to build a Helmholtz type coil to prodoce an standardized excitation field so I can compare the different designs under a similar conditions. I am hoping to come up with a high gain antenna for WWVB, 60kHz, but I think the approach should work for other frequencies as well.

Yahoo! Groups Links

12. Re: Rod form factor

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-09 03:31:14 UTC
From: jpopelish
Topic: 10 Message: 12

--- In ferriterodantennaexperimenters@yahoogroups.com, "Stumm, John C" <jcstumm@s...> wrote:
>
> Hello,
> I'm not sure you're going to gain anything from a configuration such as you suggest. Uniform diameter is more likely to retain the desirable properties that a good balanced ferrite loop posseses, like deep nulls.

Actually, I think I can show that any perfectly symmetrical form has to be exactly dipolar at a distance larger than the rod length, regardless of its shape. But not all symmetrical shapes collect flux with the same efficiency. My idea is based on the concept that a long rod gathers flux from a region around the ends that is larger than the area of the ends. The more of the flux field you can encourage to gather together and pass through the center of the rod the more signal energy you capture, there, with a coil. But the center of the rod needs to be only as large in cross section as it takes for the rod to look like a low permeability path, compared to the space parallel to the rod. A smaller diameter rod has the advantage of less wire length per turn, adn lower interwinding capacitance across a given number of turns.

Maybe I am missing something, but I think I will be able to measure the effect with a large external coil that I can use as a standard signal source to compare different designs, including one with and without the large area ends, but otherwise similar. I just got a batch of ferrite, today, to begin assembling the variations.

> For a more lively forum on loop antennas, try loopantennas@yahoogroups.com or go to radiolabs.com pose the question in their Q and A forum there.

I have joined that discussion group and posted a similar description of my experiment, but it has not made it past the moderator, yet.

> I'm sure Chris Justice will have an authoritive answer. He used to hang out here but I haven't heard him chime in in a while. P.S. You might check out the VLF loop on ebay that vanagon is peddling. He says its for WWVB.

I have asked him some questions about his design, and sent him a description of my concept, but not heard back from him, yet.

13. RE: [ferriterodantennaexperimenters] Re: Rod form factor

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-09 04:08:25 UTC
From: Stumm, John C
Topic: 10 Message: 13
Attachments: 1 described; binary payloads are missing from this source WARC

>Actually, I think I can show that any perfectly symmetrical form has
>to be exactly dipolar at a distance larger than the rod length,
>regardless of its shape. But not all symmetrical shapes collect flux
>with the same efficiency. My idea is based on the concept that a long
>rod gathers flux from a region around the ends that is larger than the
>area of the ends. The more of the flux field you can encourage to
>gather together and pass through the center of the rod the more signal
>energy you capture, there, with a coil. But the center of the rod
>needs to be only as large in cross section as it takes for the rod to
>look like a low permeability path, compared to the space parallel to
>the rod. A smaller diameter rod has the advantage of less wire length
>per turn, adn lower interwinding capacitance across a given number of
>turns.

Sounds intreguing. You've peeked my interest, Keep me/us posted on your results. I will try some similar experiments myself.

>Maybe I am missing something, but I think I will be able to measure
>the effect with a large external coil that I can use as a standard
>signal source to compare different designs, including one with and
>without the large area ends, but otherwise similar. I just got a
>batch of ferrite, today, to begin assembling the variations.

How big is your external coil? Solenoid? Subject coil in the center?

>I have joined that discussion group and posted a similar description
>of my experiment, but it has not made it past the moderator, yet.

I didn't think postings had to pass scrutiny there.

Regards,

John

Yahoo! Groups Links

14. Re: Rod form factor

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-09 04:32:36 UTC
From: jpopelish
Topic: 10 Message: 14

--- In ferriterodantennaexperimenters@yahoogroups.com, "Stumm, John C" <jcstumm@s...> wrote:

> Sounds intreguing. You've peeked my interest, Keep me/us posted on your results. I will try some similar experiments myself.

Will do. I just got through lapping the ends of 30 long beads, so I can cement them together will minimal loss of permeability. lengthwise. I also have a diamond saw blade on the way, to find out if there is any value in slicing through the hollow rod. lengthwise, to block the majority of eddy current circulation around the rod, under the wire. I will start with three examples, about 1 foot long, and 5/8 inch diameter, one 850 u and two 5000 u, one to be sliced. Once I have measurements from them, I will add the large ends (2.4 inch diameter) and see what that does for the sensitivity and Q. I expect it to increase the sensitivity but slightly lower the Q.

> >Maybe I am missing something, but I think I will be able to measure
> >the effect with a large external coil that I can use as a standard
> >signal source to compare different designs, including one with and
> >without the large area ends, but otherwise similar. I just got a
> >batch of ferrite, today, to begin assembling the variations.
>
> How big is your external coil? Solenoid? Subject coil in the center?

Haven't made it, yet, but I am working through the design of a two foot diameter, 2 feet long axis, 3 coil version so I can get about +-1% field uniformity along about an an 18 inch length. This should be a fair approximation of a free field, low frequency signal for my ~12 inch test designs. I will be testing at 60 kHz, first.

> >I have joined that discussion group and posted a similar description
> >of my experiment, but it has not made it past the moderator, yet.
>
> I didn't think postings had to pass scrutiny there.

The home page says, "All New Members are Moderated until you Post once or twice, or if I recognize you."

My first post hasn't appeared, yet (2 days). They are talking about the weather, generally, at the moment.

15. Re: Rod form factor

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-13 17:53:35 UTC
From: John Popelish
Topic: 10 Message: 15

--- In ferriterodantennaexperimenters@yahoogroups.com, "Stumm, John C" <jcstumm@s...> wrote:
>(snip)
> How big is your external coil? Solenoid? Subject coil in the center?
(snip)

I have made the frame for the test field coil. It is 3 octagon coils, 22 inches across the flats. The outside two coils will have 40 turns, and the center one will have 28 turns. They will be spaced approximately 11 inches apart, adjusted with the help of a small sensor coil to achieve a +- 1% field down the axis. My model indicates that I should get this uniformity along almost 20 inches of axis. I hope to get this wound during next weekend.

My first pass test antennas are made on 11 inch long by 0.6 inch diameter bead stacks, with 150 turns of #22 wire, but when I add the large diameter ends, they will be about 12 inches long with 2.4 inch diameter ends.

The ones made with 5000u ferrite have an inductance of about 4.9mHy, and the one made with 850u ferrite has an inductance of 3.4mHy.

16. Re: Uploaded picture of Big Ferrite

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-14 05:35:57 UTC
From: John Popelish
Topic: 4 Message: 16

--- In ferriterodantennaexperimenters@yahoogroups.com, Adam Ebel
<gccengineering@y...> wrote:
>
> Bert, Thanks! I would sure would like to learn more about how
to make my own. Also
> glad to have you on the group.
> kd7jeh <lujan@p...> wrote:
>
>> I just loaded a picture of 1" X 12" ferrite. I use ferrite beads glue
>> together with Gel super glue. I plan on making a second ferrite of
No.
>> 43 beads. I will get more details out.

I know this thread is most of a year stale, but I think this method of making ferrite rods out of low cost ferrite beads is a very underappreciated method. The beads are used in such large quantity for EMI suppression, that they are much more cost effective than long rods, made specifically for antenna use. Digikey now sells a great variety of beads in at least 3 materials for very reasonable prices, and they are also available even cheaper from Ebay.

Since the ferrite permeability is typically in the high hundreds to thousands, very little gap between beads can appreciably decrease the overall energy capture. For instance a thousandth of an inch gap per 1 inch bead will decrease the effective permeability of a 1000u bead stack to about 500.

The beads often have some radius on the ends, to make wraping wire around them less damaging, and the firing process causes shrinkage that often leaves the ends somewhat uneven. Both distortions from perfectly square ended cylinders increase the effective gap between stacked pieces.

So I have been sanding the ends with silicon carbide sandpaper on a piece of glass, (first 320 grit, followed by 600 grit) till I have fairly flat ends, before gluing them together. And I use epoxy, instead of instant glue, with a piece of all-thread through the center (surrounded by a piece of vinyl tubing to make sure I don't glue the all-thread into the core), with a clamp nut and washer on each end of the stack, so there is time for the glue to squeeze out to a very thin layer before it hardens.

I haven't done a comparison of an unlapped set with a lapped set, to see what improvement I am getting for the effort, but it would make for a good experiment. It should show up directly as increase in the inductance of a given coil.

The longer the stack, the more improvememt the lapping should make.
And the higher the permeability of the pieces, the more important that
the gaps be very thin, to make full use of the ferrite.

17. Ferrite rod antenna test bench

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-19 03:04:56 UTC
From: John Popelish
Topic: 17 Message: 17

I have made some progress in getting a field coil built, to produce a repeatable 60 kHz test field so I can compare some different antenna designs. A picture of the 3 coil unit is in the Popelish photo album. The coils are 22 inch across the flats octagons, 48 turns on each outside coil, 32 turns on the center coil. I am hoping for a 20 inch long uniform field region along the axis, to be used to test 12 inch rod antennas.

Unfortunately, it isn't done, yet. I did some preliminary uniformity testing with a small unshielded inductor, seen in the middle of the axis trough, (to check the turns count and spacing) and discovered that there is a fairly strong electric field as well as a magnetic one ,inside the coils. I am driving it with a single ended oscillator output, so one end has very little voltage on the coil, but the other end has enough that I can easily see it with a scope probe on the axis.

Either I have to come up with a shield for the coils, or I have to transformner couple to the generator, with a grounded center tapped secondary and drive the coils in parallel instead of in series, to get some cancellation of the electric fields. Otherwise, each antenna tested will have to be well electrostatically shielded.

At this rate, it will probably be after Christmas before I get any test data to report.

18. Re: Ferrite rod antenna test bench

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-24 03:41:35 UTC
From: John Popelish
Topic: 17 Message: 18

I have added 4 inch wide aluminum flashing 1 inch under the coils of my test field generator. I was hoping for a big reduction of capacitive coupling between the field coils and any test antenna in the center. But when I applied voltage to one end of all 3 coils, recorded the capacitive voltage, and then grounded the shields, the voltage dropped to only about 1/7th of the unshielded value. This will have to do.

I will place the ferrite rod test antennas in the field generator, with their grounded end inside the hot end of the field coil and the hot end inside the grounded end of the field coils. This should cut the electrostatic coupling in half again. At least, I will be able to test shielded antenna designs versus unshielded ones for noise immunity by connecting the field coil shield to an interferring signal frequency.

Pictures of the field coil in production have been added to my photo folder.

I purchased an old HP 400 AC volt meter (10 Hz to 10 MHz frequency response) today, and I may use it to take a first pass at comparing 3 different rod antenna designs, this weekend.

19. Re: Ferrite rod antenna test bench

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-25 01:23:01 UTC
From: John Popelish
Topic: 17 Message: 19

I have just returned from the lab with the first preliminary results for 3 antenna forms. Here is the data.

Ferrite rod antenna experiments

Antenna 1: 10 each Steward LFB159079-000, 15.88mm O.D., 7.87mm I.D, 28.58mm long, 150 turns 20gauge, heavy Formvar. Assembled length 286mm. Inductance 4.9 mHy.

Antenna 2: 10 each Steward LFB159079-000, 15.88mm O.D., 7.87mm I.D, 28.58mm long, slit lengthwise with diamond saw, 150 turns 20gauge, heavy Formvar. Assembled length 286mm. Inductance 4.9 mHy.

Antenna 2: 8 each Steward 28B2400-000, 15mm O.D., 5.90mm I.D, 35mm long, 150 turns 20gauge, heavy Formvar. Assembled length 281mm. Inductance 3.4 mHy.

Inductance measured with Almost All Digital Electronics L/C Meter IIB at ends of 6 inch long, twisted leads.

Field coil

The field coil consists of 3 octagonal sections, 22.625 inches across the flats. The outer coils are 22 inches apart (centerline to centerline) and the third coil is centered between these 2. The outer coils each have 45 turns of 22 gauge wire and the center coil has 30 turns.

There is a 0.014 inch think by 4 inch wide aluminum shield inside each coil. The ends are taped together without creating a shorted turn. These each form an octagon about 20 inches across the flats. The outer two are flush with the outside edges of their coils (for maximum shielding toward the center of the structure) and the center shield is centered under its coil.

I measured the inductance of the 3 coils in series with antenna 1 centered in the coils, using an Almost All Digital Electronics LC meter, model IIB.
http://www.aade.com/LCinst/lcm2b.htm

The measured inductance was 8.4 mHy, but this is a bit high, because it does not take the parallel capacitance of the coil into account. The meter measures inductance by resonating it with an internal 680 pf capacitor. Then I found the self resonant frequency of the coil by feeding it with a signal generator through a 33k resistor and watched for the voltage to peak with an oscilloscope (with a 10x probe). The self resonant frequency was 185 kHz. Combining all this information,

I calculate that the actual coil inductance is about 7.31 mHy and the parallel capacitance of the coil and scope probe is about 101 pF.

This implies that the capacitance I would have to add to resonate the coil at 60 kHz would be about 860 pF. The field coils are not being resonated for the first pass test, though this might reduce some harmonic distortion from the signal generator that interferes a bit with the peak voltage measurements.

Test Results

Test setup: I fed the feed coil with a Wavetek signal generator at 60 kHz, and monitored the coil voltage with one channel of the scope. I set the amplitude to 10 volts, peak (20 volts, peak to peak). The voltage from each antenna was measured with the other channel both unloaded and resonated with a 50 to 1900 pF air variable capacitor (3 paralleled sections) in parallel with a 1000 pF, 500 volt polystyrene capacitor.

Antenna #	Open circuit volts, peak	Resonant volts, peak
1	0.80	51
2	0.80	44
3	0.55	9.4

Some early conclusions:

At 60 kHz and with rods about 18 tines as long as their diameter, there is a definite advantage in using the 5000u material, over the 850u material, in spite of its lower resistivity. I think these results indicate that antenna 1 has a resonant Q of about 51/.8=63.75, and this might be conservative, since there is a non zero energy coupling from the antenna rod back out to the driving coil that is greater than the coupling would be between the rod and radiation. So the bandwidth of antenna 1 resonated and connected to a high impedance amplifier would be less than 1 kHz.

I think the next series of tests will be these 3 antennas with large diameter ferrite ends added, perhaps with wax, in case I want to go back to this first configuration.

I welcome any comments on the experiment, so far, or any advice as to variations I should try.

20. Re: Enhanced shielded ferrite loop for Ramsey Signal Magnet (kit)

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-26 08:06:01 UTC
From: John Popelish
Topic: 6 Message: 20

--- In ferriterodantennaexperimenters@yahoogroups.com, "John Stumm" <jcstumm@s...> wrote:
>
> My latest shielded loop, (11" ferrite rod attached to a stock Ramsey
> Signal Magnet)has produced some impressive results! With my part 15
> broadcaster tuned to 1700Khz, I was able to clearly pick up the tone
> bursts at 9.8 miles out! The AM-88 kit from Northcountry Radio I'm
> using is stock, (100mw) feeding a base loaded 9ft CB whip and totally
> legal, (I believe). The range might have been greater but I ran out
> of road. I brought along my CCrane twin loop ferrite for comparison.
> It could pick up the signal but it was barely discernable through the
> noise. I have proved that the Ramsey can be a real performer with a
> simple mod. The 11" rod I used is actually 9 - 3.5" small ones
> bundled 3X3. (5 bucks + shipping for 10 of 'em on ebay) The guy sells
> them continually. A good deal! The glued together assembly is stuffed
> in a piece of ¾" PVC thin wall and about 70 turns of #20 is evenly
> wrapped along the entire length. The shield is a kitchen stove
> exhaust fan screen that I rolled into a perfectly sized faraday
> shield. I will post a pic in photos, or there's already a bigger
> close-up in the loopantennas group file section. Oh yea, the receiver
> I'm using is just a DX-392 from RS. It has a convenient external
> antenna input jack that accommodates the Ramsey's output very well.
> Let's get this group rolling again! Chris, are you still out there?

I've been admiring the photo of this antenna, but had a thought for an improvement. I think you could improve the shielding performance quite a bit more, if the coil was rewound as a pair of coils wound in opposite directions from the outside toward the center, with the outside ends both connected to the shield. In effect, this would make a balanced design with a grounded center tap, but the center tap would be at the ends, to complete the shield to include the coil ends. If the line to the receiver is not balanced, you could put a balun inside the shield, or even better, a tuning capacitor and differential input preamplifier with a single ended output.

21. Re: Ferrite rod antenna test bench

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-26 21:08:16 UTC
From: John Popelish
Topic: 17 Message: 21

I have some additional variations to add to the previous 3 designs.

Antenna 1A: Antenna 1 with a pair of Steward MM1400-300 disk, 35.56mm Dia., 2.54mm thick, one attached on each end with pressure sensitive adhesive. Assembled length 291mm. Inductance 4.9 mHy.

Antenna 1B: Antenna 1A with a pair of Steward 28B2800-000 toroids, 60.96mm O.D., 35.56mm I.D., 12.7mm thick, one attached to each end over the disks with hot melt glue. Assembled length 305mm. Inductance 5.6 mHy.

Antenna 2A: Antenna 2 with a pair of Steward MM1400-300 disk, 35.56mm Dia., 2.54mm thick, one attached on each end with pressure sensitive adhesive. Assembled length 291mm. Inductance 5.0 mHy.

Antenna 2B: Antenna 2A with a pair of Steward 28B2800-000 toroids, 60.96mm O.D., 35.56mm I.D., 12.7mm thick, one attached to each end over the disks with hot melt glue. Assembled length 305mm. Inductance 5.7 mHy.

Antenna 3A: Antenna 3 with a pair of Steward MM1400-300 disk, 35.56mm Dia., 2.54mm thick, one attached on each end with hot melt glue. Assembled length 286mm. Inductance 3.3 mHy.

Antenna 3B: Antenna 3A with a pair of Steward 28B2800-000 toroids, 60.96mm O.D., 35.56mm I.D., 12.7mm thick, one attached to each end over the disks with hot melt glue. Assembled length 300mm. Inductance 3.6 mHy.

Antenna # Open circuit volts, peak Resonant volts, peak
1A 0.92 59
2A 0.92 53
3A 0.69 10.6

Antenna # Open circuit volts, peak Resonant volts, peak
1B 1.12 78
2B 1.14 59
3B 0.80 10.4

With 1A, 2A, 1B, 2B at resonance, I am now seeing a slight dip in the signal generator voltage that is driving the field coil, and I am correcting the field coil peak voltage back to 10 volts after tuning the antennas to resonance.

There are a few unexpected trends in the data, that I will have to verify with more test runs.

22. RE: [ferriterodantennaexperimenters] Re: Enhanced shielded ferrite loop for Ramsey Signal Magnet (kit)

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-26 21:09:17 UTC
From: Stumm, John C
Topic: 6 Message: 22
Attachments: 1 described; binary payloads are missing from this source WARC

From: ferriterodantennaexperimenters@yahoogroups.com on behalf of John Popelish
Sent: Mon 12/26/2005 12:06 AM
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: [ferriterodantennaexperimenters] Re: Enhanced shielded ferrite loop for Ramsey Signal Magnet (kit)

>I've been admiring the photo of this antenna, but had a thought for an
>improvement. I think you could improve the shielding performance
>quite a bit more, if the coil was rewound as a pair of coils wound in
>opposite directions from the outside toward the center, with the
>outside ends both connected to the shield. In effect, this would make
> balanced design with a grounded center tap, but the center tap would
>be at the ends, to complete the shield to include the coil ends. If
>the line to the receiver is not balanced, you could put a balun inside
>the shield, or even better, a tuning capacitor and differential input
>preamplifier with a single ended output.

Thanks for the complement, I've been admiring your work also. Keep it up. I may try my hand a similar test stand. I'm currently using a Palomar Engineers LA-1 as a test amp for some new loop cofigurations. It will lend itself very well to try your suggestion. It takes a balanced input and it seems to outperform the Ramsey. I will post a pic of it along with a couple of my latest loops i made for it, (LW and MW) I will start a LoopDuJour file here too! I'm really pleased with the MW head's performance. One look at it and you'll see why that could be. It's like a ferrite loop on steriods. Look for it under Ferroids... ok already, gotta call em something. I think I'll try shielding the LW loop first. it's really a noise magnet.

John

Yahoo! Groups Links

23. Optimizing windings

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-26 21:21:37 UTC
From: John Popelish
Topic: 23 Message: 23

I have seen many opinions on the best way to put windings on a ferrite rod antenna, but I can find few facts.

Since I now have a test bench that I can use to compare variations (at least below 185 kHz), I think I will try a series of tests that compare the following 4 winding designs, all wound on tubes that can be slipped over the same rod, or a series of different rods, so the same piece of ferrite is used for a series or results, and only the windings differ.

I am naming these examples starting with 4, to keep from confusing myself with the series numbered 1 through 3 that I have already begun testing.

Antenna 4. The full length of the rod wound with a parallel pair of wires, and then one wire removed to make a spaced winding, with the spaces about equal to the diameter of the wire.

Antenna 5. The central half of the length, close wound, with the same number of turns used for antenna 4.

Antenna 6. The central section of the length, close wound, but the turns adjusted to produce the same inductance as antenna 4.

Antenna 7. The central section of the length, close wound, but with the turns adjusted to produce the same self resonant frequency as antenna 4.

I think the testing of sensitivity, Q and self resonant frequency of these 4 variations might be instructive. Before I build these, I would be interested in hearing your suggestions for how to improve this series of comparative tests.

Or, if you want to show off, predict something about the test results. ;-)

24. Antenna experiment photos

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-27 03:42:11 UTC
From: John Popelish
Topic: 24 Message: 24

I just added two photos to my album.

I wanted to be sure my scope wasn't lying to me about the very large voltages I have been seeing at resonance (like my X10 probe was really X1 or something), so I connected a small argon glow lamp across the antenna and tuned to resonance. Sure enough, the lamp lights. I guess I should drop back of the field strength to make sure the antennas are acting the same way they will with small signals.

I also added a photo of antennas 1B, 2B and 3B (the ones with the large diameter ends). Damn, they look like something you would see sitting around a train yard.

I got one of my two AC RMS volt meters running, tonight, and in a few days I will check out the other. Then I can make measurements from the meters instead of from a scope screen (one for the field drive and one for the antenna output. That should give me something like 1% repeatablity and ratios, even if they are not precisely calibrated.

25. Re: Enhanced shielded ferrite loop for Ramsey Signal Magnet (kit)

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-27 19:07:07 UTC
From: John Popelish
Topic: 6 Message: 25

--- In ferriterodantennaexperimenters@yahoogroups.com, "Stumm, John C" <jcstumm@s...> wrote:
(snip)
> I will post a pic of it along with a couple of my latest loops
> i made for it, (LW and MW)
> I will start a LoopDuJour file here too!
> I'm really pleased with the MW head's performance.
> One look at it and you'll see why that could be.
> It's like a ferrite loop on steriods. Look for it under
> Ferroids... ok already, gotta call em something.
(snip

What is the I.D of the tubing used in the
"readily accepts various cores" antenna and the overall length of the
rod section?

26. RE: [ferriterodantennaexperimenters] Re: Enhanced shielded ferrite loop for Ramsey Signal Magnet (kit)

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-27 20:54:03 UTC
From: Stumm, John C
Topic: 6 Message: 26
Attachments: 1 described; binary payloads are missing from this source WARC

It's 1" thin wall PVC (a little over 11/8" I.D.) The rods i've used so far are: a Stormwise VFR-18A, Basically a bunch of ferrite beads in a section of 1/2" PVC 18" long. The thin wall allowed the above mention core to fit inside and slide smoothly for varying the inductance. And, the other is a series of 9 -2"x7/8" cylindrical ferrite cores glued together.

What is the I.D of the tubing used in the
"readily accepts various cores" antenna and the overall length of the
rod section?

Yahoo! Groups Links

27. RE: [ferriterodantennaexperimenters] Re: Enhanced shielded ferrite loop for Ramsey Signal Magnet (kit)

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-27 20:55:52 UTC
From: Stumm, John C
Topic: 6 Message: 27
Attachments: 1 described; binary payloads are missing from this source WARC

It's 1" thin wall PVC (a little over 11/8" I.D.) The rods i've used so far are: a Stormwise VFR-18A, Basically a bunch of ferrite beads in a section of 1/2" PVC 18" long. The thin wall allowed the above mention core to fit inside and slide smoothly for varying the inductance. And, the other is a series of 9 -2"x7/8" cylindrical ferrite cores glued together.

What is the I.D of the tubing used in the
"readily accepts various cores" antenna and the overall length of the
rod section?

Yahoo! Groups Links

28. Re: Enhanced shielded ferrite loop for Ramsey Signal Magnet (kit)

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-28 03:50:18 UTC
From: John Popelish
Topic: 6 Message: 28

--- In ferriterodantennaexperimenters@yahoogroups.com, "Stumm, John C" <jcstumm@s...> wrote:
>
>
> It's 1" thin wall PVC (a little over 11/8" I.D.) The rods i've used so far are: a Stormwise VFR-18A, Basically a bunch of ferrite beads in a section of 1/2" PVC 18" long. The thin wall allowed the above mention core to fit inside and slide smoothly for varying the inductance. And, the other is a series of 9 -2"x7/8" cylindrical ferrite cores glued together.

I would love to see how it worked with 18 of these lapped and glued together:
http://markbehere.com/gpage5.html

I bought a bunch of these and may make some test antennas with them after I finish with the 5/8th inch diameter ones I am testing, now.

29. Re: Optimizing windings

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-28 04:01:06 UTC
From: John Popelish
Topic: 23 Message: 29

--- In ferriterodantennaexperimenters@yahoogroups.com, "John Popelish" <jpopelish@r...> wrote:
(snip)
> Antenna 4. The full length of the rod wound with a parallel pair of
> wires, and then one wire removed to make a spaced winding, with the
> spaces about equal to the diameter of the wire.
>
> Antenna 5. The central half of the length, close wound, with the same
> number of turns used for antenna 4.
>
> Antenna 6. The central section of the length, close wound, but the
> turns adjusted to produce the same inductance as antenna 4.
>
> Antenna 7. The central section of the length, close wound, but with
> the turns adjusted to produce the same self resonant frequency as
> antenna 4.
>
> I think the testing of sensitivity, Q and self resonant frequency of
> these 4 variations might be instructive. Before I build these, I
> would be interested in hearing your suggestions for how to improve
> this series of comparative tests.

I got some thin walled 1/2 inch PVC pipe and cut 11 inch sections to fit over the stacks of beads I have been working with in the last two weeks.

I wrapped #4 with 154 turns of 20 ga., spaced,

and #5 with 154 turns close wound in the center.

I wound more than 154 turns on #6 and #7 and will remove turns as necessary to hit their specs.

I also added antenna #8, with the full 11 inches close wound with 308 turns, just to find out how much bandwith I lose to get the signal from those extra turns.

Maybe I'll get to do some testing this weekend.

In the mean time, I'm kinda proud of the blister on my finger from wire sliding over it. :-)

30. The Internet is Awesome For Relationships

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-28 08:20:32 UTC
From: vi.west9717@wafflelen.com
Topic: 30 Message: 30

Yeah I know, I never thought this stuff would work either, but honestly I stand corrected. This place http://www.wematchem.info/lpxv is actually very awesome. I hooked mycam up and within no time I was talking to a few great ladies over it. Anyway, I recommend it to everyone here!

31. Re: Optimizing windings

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-29 05:05:41 UTC
From: John Popelish
Topic: 23 Message: 31

--- In ferriterodantennaexperimenters@yahoogroups.com, "John Popelish" <jpopelish@r...> wrote:
I uploaded a photo of the following 5 test antennas.

Antenna 4. The full length of the rod wound with a parallel pair of wires, and then one wire removed to make a spaced winding, with the spaces about equal to the diameter of the wire. 154 turns, 2.49 mHy, SRF 510kHz, Q 24.

Antenna 5. The central half of the length, close wound, with the same number of turns used for antenna 4. 154 turns, 4.15 mHy, SRF 453 kHz, Q 38.

Antenna 6. The central section of the length, close wound, but the turns adjusted to produce the same inductance as antenna 4. 112 turns, 2.50 mHy, SRF 588 kHz, Q 21.

Antenna 7. The central section of the length, close wound, but with the turns adjusted to produce the same self resonant frequency as antenna 4. 140 turns, 3.48 mHy, SRF 500kHz, Q 40.

Antenna #8, with the full 11 inches close wound. 308 turns, 9.69 mHy, SRF 453kHz, Q 38.

All 5 were wound on 1/2 inch thin wall PVC pipe. Each was tested with the same stack of 10 each Steward LFB159079-000, 15.88mm O.D., 7.87mm I.D 28.58mm long beads with a total length of 286 mm core.

Self resonant frequency and Q were measured by observing the amplitude on a scope with a 10 Meg, 10X probe while driving the antenna through a 10 Meg resistor. Q was calculated by the resonant frequency divided by the difference of the two frequencies with 70.7% of resonant amplitude. I still have to crunch the raw numbers to calculate the actual inductance, and parallel capacitance of each example from the measured inductance and SRF.

In a few days I hope to get time to compare the sensitivity of of these 5 antennas to a similar magnetic field at 60 kHz.

32. [ferriterodantennaexperimenters] Test transmitter

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-30 00:01:56 UTC
From: Stumm, John C
Topic: 32 Message: 32
Attachments: 1 described; binary payloads are missing from this source WARC

I have just posted a couple of pics of my test transmitter / loop antenna combo I'm using to test the nulling ability of my ferrite loops.I positioned it in the back yard about 100 ft from my shop. The supply voltage is variable from my shop so that I might vary the output power from the loop. At 12 volts it's capable of about a watt of output. (not that i'd ever drive it that hard). The loop is about 4 feet in diameter with 5 turns of litz wire. Not sure if the litz helps but the best SWR i've achieved is approaching 3/1. I guess that's good for a solenoid loop? The pics are in my ferroids folder.

John

From: ferriterodantennaexperimenters@yahoogroups.com on behalf of John Popelish
Sent: Tue 12/27/2005 7:50 PM
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: [ferriterodantennaexperimenters] Re: Enhanced shielded ferrite loop for Ramsey Signal Magnet (kit)

--- In ferriterodantennaexperimenters@yahoogroups.com, "Stumm, John C" <jcstumm@s...> wrote:
>
>
> It's 1" thin wall PVC (a little over 11/8" I.D.) The rods i've used so far are: a Stormwise VFR-18A, Basically a bunch of ferrite beads in a section of 1/2" PVC 18" long. The thin wall allowed the above mention core to fit inside and slide smoothly for varying the inductance. And, the other is a series of 9 -2"x7/8" cylindrical ferrite cores glued together.

I would love to see how it worked with 18 of these lapped and glued together:
http://markbehere.com/gpage5.html

I bought a bunch of these and may make some test antennas with them after I finish with the 5/8th inch diameter ones I am testing, now.

Yahoo! Groups Links

33. Re: [ferriterodantennaexperimenters] Test transmitter

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-30 12:36:51 UTC
From: Adam Ebel
Topic: 32 Message: 33

John, Sounds like a great test for your ferrite loop experiment. What frequency are you running on? Is it just a part 15 AM broadcast transmitter, or one of those ham test transmitters? Keep up the great work, maybe I can try that out next time.
Adam E gccengineering

"Stumm, John C" <jcstumm@...> wrote:
I have just posted a couple of pics of my test transmitter / loop antenna combo I'm using to test the nulling ability of my ferrite loops.I positioned it in the back yard about 100 ft from my shop. The supply voltage is variable from my shop so that I might vary the output power from the loop. At 12 volts it's capable of about a watt of output. (not that i'd ever drive it that hard). The loop is about 4 feet in diameter with 5 turns of litz wire. Not sure if the litz helps but the best SWR i've achieved is approaching 3/1. I guess that's good for a solenoid loop? The pics are in my ferroids folder.

John

From: ferriterodantennaexperimenters@yahoogroups.com on behalf of John Popelish
Sent: Tue 12/27/2005 7:50 PM
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: [ferriterodantennaexperimenters] Re: Enhanced shielded ferrite loop for Ramsey Signal Magnet (kit)

--- In ferriterodantennaexperimenters@yahoogroups.com, "Stumm, John C" <jcstumm@s...> wrote:
>
>
> It's 1" thin wall PVC (a little over 11/8" I.D.) The rods i've used so far are: a Stormwise VFR-18A, Basically a bunch of ferrite beads in a section of 1/2" PVC 18" long. The thin wall allowed the above mention core to fit inside and slide smoothly for varying the inductance. And, the other is a series of 9 -2"x7/8" cylindrical ferrite cores glued together.

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34. RE: [ferriterodantennaexperimenters] Test transmitter

Yahoo group: ferriterodantennaexperimenters
Date: 2005-12-31 02:13:53 UTC
From: Stumm, John C
Topic: 32 Message: 34
Attachments: 1 described; binary payloads are missing from this source WARC

Adam,
It's an AM-88 kit that i purchased from North country radio. It's got a wide freq range from LW through the MW bands. I have it set at 1700Khz right now as there's no stations that use it around here. I made a gooser board that allows a higher output. I don't ever goose the power up in the MW BCB. With a base loaded vertical, (CB 9 ft whip)) it gets out just fine anyway, (at 100 mW).I've heard my beacon at 10 miles out! That's with a very sensitive shielded amplified loop. My CCrane had lost it in the noise long before that.

John

From: ferriterodantennaexperimenters@yahoogroups.com on behalf of Adam Ebel
Sent: Fri 12/30/2005 4:36 AM
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: Re: [ferriterodantennaexperimenters] Test transmitter

John, Sounds like a great test for your ferrite loop experiment. What frequency are you running on? Is it just a part 15 AM broadcast transmitter, or one of those ham test transmitters? Keep up the great work, maybe I can try that out next time.
Adam E gccengineering

"Stumm, John C" <jcstumm@...> wrote:

I have just posted a couple of pics of my test transmitter / loop antenna combo I'm using to test the nulling ability of my ferrite loops.I positioned it in the back yard about 100 ft from my shop. The supply voltage is variable from my shop so that I might vary the output power from the loop. At 12 volts it's capable of about a watt of output. (not that i'd ever drive it that hard). The loop is about 4 feet in diameter with 5 turns of litz wire. Not sure if the litz helps but the best SWR i've achieved is approaching 3/1. I guess that's good for a solenoid loop? The pics are in my ferroids folder.

John

From: ferriterodantennaexperimenters@yahoogroups.com on behalf of John Popelish
Sent: Tue 12/27/2005 7:50 PM
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: [ferriterodantennaexperimenters] Re: Enhanced shielded ferrite loop for Ramsey Signal Magnet (kit)

--- In ferriterodantennaexperimenters@yahoogroups.com, "Stumm, John C"
<jcstumm@s...> wrote:
>
>

> It's 1" thin wall PVC (a little over 11/8" I.D.) The rods i've used so far are: a Stormwise VFR-18A, Basically a bunch of ferrite beads in a section of 1/2" PVC 18" long. The thin wall allowed the above mention core to fit inside and slide smoothly for varying the inductance. And, the other is a series of 9 -2"x7/8" cylindrical ferrite cores glued together.

I would love to see how it worked with 18 of these lapped and glued together:
http://markbehere.com/gpage5.html

I bought a bunch of these and may make some test antennas with them after I finish with the 5/8th inch diameter ones I am testing, now.

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35. Re: Optimizing windings

Yahoo group: ferriterodantennaexperimenters
Date: 2006-01-02 21:45:08 UTC
From: John Popelish
Topic: 23 Message: 35

Here is the latest raw data on 5 coil forms and 3 rod types.

All antennas use one of the following 3 cores:

Core A: 10 each Steward LFB159079-000, 15.88mm O.D., 7.87mm I.D., 28.58mm long, lapped flat on ends. Assembled length 286mm (11.3").

Core B: 10 each Steward LFB159079-000, 15.88mm O.D., 7.87mm I.D., 28.58mm long, lapped flat on ends. Sawed radially along entire length (~1mm slot) to interrupt eddy current, assembled length 286mm.

Core C: 10 each Steward 28B0625-100, 15.88mm O.D., 7.87mm I.D., 28.58mm long, lapped flat on ends. Assembled length 286mm.

The following coils (shown in my photo folder) have been wound on 11 inch (280mm) long sections of thin walled PVC pipe, .733" O.D. (18.6mm), .858" O.D. (21.8mm), with 6" leads, (about two twists per inch) exiting one end, the one from the far end between two layers of vinyl tape over the coil, to be grounded:

Coil 4: 154 turn 20 AWG, space wound (using second strand of 20 AWG wire as spacer), using entire form length.

Coil 5: 154 turns 20 AWG, close wound in center of form. Turns the same count as Coil 4.

Coil 6: 112 turns 20 AWG, close wound in center of form. Turns chosen to produce about the same inductance of Coil 4, both with core A.

Coil 7: 140 turns 20 AWG, close wound in center of form. Turns chosen to produce about the same self resonant frequency (loaded with 10X scope probe) as Coil 4.

Coil 8: 304 turns 20 AWG, close wound using entire form length. Turns chosen to cover the same length as Coil 4, but close wound.

Measured antenna inductance
Each coil, core combination inductance was measured, using an Almost All Digital Electronics LC meter, model IIB.
http://www.aade.com/LCinst/lcm2b.htm
which resonates the coil with an internal 680 pF capacitor. The instrument was zeroed by connecting both clips to the ground lead of each coil before connecting the hot clip to the hot end of the coil. Temperature during test, 48 F.

Coil Core Measured Inductance, mHy
4 A 2.488
4 B 2.485

4 C 2.052
5 A 4.150
5 B 4.147
5 C 3.486
6 A 2.495
6 B 2.483
6 C 2.706
7 A 3.476
7 B 3.643
7 C 2.884
8 A 9.693
8 B 9.790
8 C 8.149

Self resonant frequency and Q

The self resonant frequency and Q of each coil, core combination was measured by exciting the coil with an Interstate signal generator through a 10 Meg, 1/8th watt resistor, soldered to the hot lead of the coil. The resonance was observed with an oscilloscope with a 10X (10 Meg) probe attached across the coil. The capacitance of the probe was measured with the LC meter at about 10.7 pF. The amplitude at resonance was set to 8 scope divisions (zero signal at bottom of screen, peaks at top of screen). The resonant frequency was recorded by reading the dial frequency on the generator. Then the frequency was turned up and down, to find the frequency pair with an amplitude of 0.707 times the resonant amplitude (5.66 divisions), or half the power of the resonant frequency. The Q was calculated as the resonant frequency divided by the difference of the two half power frequencies. Temperature during test, 45 F.

Coil Core Measured Lower Higher Q
resonant half power half power
frequency frequency, frequency,
in kHz in kHz in kHz
4 A 519 510 529 27.3
4 B 520 511 529 28.9
4 C 695 661 735 9.4
5 A 462 457 470 35.5
5 B 465 460 472 38.8
5 C 587 551 630 7.4
6 A 600 589 609 30.0
6 B 599 590 606 37.4
6 C 737 695 786 8.1
7 A 510 501 518 30.0
7 B 502 495 510 33.5
7 C 634 598 680 7.7
8 A 246 240 251 22.4
8 B 250 245 256 22.7
8 C 335 313 360 7.1

60 kHz magnetic sensitivity

The sensitivity of each coil, core combination was tested by placing them in the center of a field coil driven by the Interstate signal generator at 1 volt peak.

The field coil consists of 3 octagonal sections, 22.625 inches across the flats. The outer coils are 22 inches apart (centerline to centerline) and the third coil is centered between these 2. The outer coils each have 45 turns of 22 gauge wire and the center coil has 30 turns.

There is a 0.014 inch think by 4 inch wide aluminum shield inside each coil. The ends are taped together without creating a shorted turn. These each form an octagon about 20 inches across the flats. The outer two are flush with the outside edges of their coils (for maximum shielding toward the center of the structure) and the center shield is centered under its coil.

The antennas were oriented so that their grounded end was at the hot end of the field coil and all connections were made at the grounded end of the field coil, where the electric field from the field coil was weakest.

Each antenna was resonated with a combination of a 3 section air variable capacitor (all 3 sections paralleled, with a capacitance range between *** and **** pF) and zero, one or two 1000 pF 100 V polystyrene capacitors, as needed to achieve resonance. This capacitance was connected via a pair of 6 inch alligator clip leads. The resonance was measured with a scope via a 10X, 10 Meg probe. Temperature during test, 48 F.

Coil Core Measured Calculated
resonant signal volts
voltage per coil turn
4 A 9.0 0.0584
4 B 7.2 0.0468
4 C 0.78 0.0051
5 A 9.8 0.0636
5 B 9.8 0.0636
5 C 0.98 0.0064
6 A 8.6 0.0768
6 B 8.6 0.0768
6 C 0.88 0.0079
7 A 9.4 0.0671
7 B 9.4 0.0671
7 C 0.90 0.0064
8 A 5.9 0.0192
8 B 6.0 0.0195
8 C 1.42 0.0046

After I look at this a while, I will do my best to pull some generalizations from this data. You are certainly welcome to make

such observations, in advance to help me out.

36. Re: Optimizing windings

Yahoo group: ferriterodantennaexperimenters
Date: 2006-01-04 05:45:38 UTC
From: John Popelish
Topic: 23 Message: 36

--- In ferriterodantennaexperimenters@yahoogroups.com, "John Popelish" <jpopelish@r...> wrote:
>
> Here is the latest raw data on 5 coil forms and 3 rod types.
(snip)

I have been optimistically reading 3 significant digits from a frequency dial for these SRF and Q measurements. Tonight I ran off the top of one decade and found that when I changed ranges I was below the next decade up. I knew the generator hadn't been calibrated in a while but I hoped it wasn't as bad as it is.

I now have to buy a frequency counter and rerun all the SRF and Q measurements, again. And I have added 3 more coils with lower self resonatnt frequencies (to get closer to what I need for a 60 kHz antenna) to the experiment.

I'll be back in a week or 3 with better data.

In the mean time, I think the data is good enough to bust the myth that a spaced coil is superior to a close wound one. That rule may work well for air core coils, but when you add a long, high permeability ferrite rod, turns in the middle third of the rod work so much better than ones at the ends that you get more sensitivity and Q by putting all the turns in that third, even if you have to use fewer turns to get the same self resonant frequency. I had a hunch that this might be the case, since every commercial rod antenna I have ever seen uses a coil about a half to a third of the rod length.

37. Iron wire as core material

Yahoo group: ferriterodantennaexperimenters
Date: 2006-01-08 23:11:58 UTC
From: John Popelish
Topic: 37 Message: 37

I decided to try a few variations of iron wire as a core material, to compare the performance with some of the stacked ferrite beads I have been testing.

My first attempt was a bundle of 56 inch pieces of 16 ga. soft iron wire sold as tie wire for rebar. I stretched 17 foot pieces a bit, (clamped one end in a big vise and the other end in visegrips and hit the visegrips with a big rubber mallet) to straighten them and did my best to anneal it and burn off the oil coating with a propane torch. Then I cut them into 1 foot pieces. I filled a piece of vinyl tubing with a 5/8" I.D. (to match the O.D. of the ferrite beads) with the pieces. Then I sealed one end by sticking it in a bottle cap of 5 minute epoxy. I stood it in a bottle with an ounce or so of slow cure epoxy, and pulled a vacuum on it to remove the air from between the wires. Then I applied air pressure to force the epoxy up between the wires. After the epoxy hardened, I peeled the vinyl tube off and trimmed the rod to match the ferrite rods (just over 11 inches).

The only tests I have performed, so far are a resistance test between wires (there is only an ohm or two between any of them, so the oxide was not a very effective insulation) and an inductance test with one of the test coils I have used with the ferrite rods. The inductance test indicates that the effective permeability (at about 60 kHz the meter applied) was about 500, or 1/10th as high as that of the low frequency beads.

I will make 1 more test rod of this wire, painting each wire with a thin layer of epoxy before potting them together, to make sure the low effective permeability is not caused by current circulating around the bundle. This time, I will try using my welder to anneal the lengths of wire before cutting. That will allow me to hold the peak temperature longer.

I also have a roll of 34 ga. iron wire that I will try to bundle into a 5/8th inch diameter rod by the same vacuum potting method. I haven't yet figured out a good way to anneal it, first. Maybe I can wind it to a second spool, pulling it through a tube oven.

I am not optimistic that these wire rods will have any advantages over ferrite for any application, but I thought it would be useful to include them in the test for future reference. They might be the only practical choice for someine who has no source of ferrite available.

One clean experimental result is worth a thousand untested opinions. A whole bunch of experimental results are a basis for empirical formulas or a test of a hypothesis or two.

38. Source for large Ferrite bar

Yahoo group: ferriterodantennaexperimenters
Date: 2006-01-09 08:47:25 UTC
From: spaetzel1
Topic: 38 Message: 38

Hi, I am looking for a source for a large ferrite bar.
If anyone knows where I can get a 1" dia bar approximately 24" long I would appreciate a reply.

Thanks and Best Regards to all.

Ed Spaetzel

39. Re: Source for large Ferrite bar

Yahoo group: ferriterodantennaexperimenters
Date: 2006-01-09 18:09:05 UTC
From: John Popelish
Topic: 38 Message: 39

--- In ferriterodantennaexperimenters@yahoogroups.com, "spaetzel1" <edspaetz@c...> wrote:
>
> Hi, I am looking for a source for a large ferrite bar.
> If anyone knows where I can get a 1" dia bar approximately 24" long I
> would appreciate a reply.

I know of no singe piece rods that size. But it is fairly easy to assemble smaller pieces to approximate one. Digikey sells at least 3 materials in a large bead form, about 1 inch diameter, by 1.125 inch long, with a half inch hole. If you lap the ends with some carbide sandpaper on a sheet of glass, they stack with very small effective gap between them. There is a picture of a foot long version in the photo section of this group.

What is the maximum frequency you intend to use with your ferrite bar?

40. RE: [ferriterodantennaexperimenters] Source for large Ferrite bar

Yahoo group: ferriterodantennaexperimenters
Date: 2006-01-09 23:32:18 UTC
From: Stumm, John C
Topic: 38 Message: 40
Attachments: 1 described; binary payloads are missing from this source WARC

Ed,
Does it need to be a solid bar or could you possibly glue several ferrite cores together? I see large quantities sold on ebay.
And what's it for if I might ask? An ELF project?
Regards,
John

From: ferriterodantennaexperimenters@yahoogroups.com on behalf of spaetzel1
Sent: Mon 1/9/2006 12:47 AM
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: [ferriterodantennaexperimenters] Source for large Ferrite bar

Hi, I am looking for a source for a large ferrite bar.
If anyone knows where I can get a 1" dia bar approximately 24" long I
would appreciate a reply.

Thanks and Best Regards to all.

Ed Spaetzel

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41. Re: [ferriterodantennaexperimenters] Re: Source for large Ferrite bar

Yahoo group: ferriterodantennaexperimenters
Date: 2006-01-09 23:41:53 UTC
From: Ed Spaetzel
Topic: 38 Message: 41

John,

I was actually looking for a single bar, but if that is unavailable, I may try assembling one from pieces.

I plan to go to about 10 Khz with this one.
I have another one in progress that only will go to 100 Hz.

Ed

"Long you'll live and high you'll fly,
but only if you ride the tide,
balanced on the biggest wave,
racing toward an early grave."

Pink Floyd
Dark Side of the Moon
----- Original Message -----
From: John Popelish
To: ferriterodantennaexperimenters@yahoogroups.com
Sent: Monday, January 09, 2006 1:09 PM
Subject: [ferriterodantennaexperimenters] Re: Source for large Ferrite bar

--- In ferriterodantennaexperimenters@yahoogroups.com, "spaetzel1"
<edspaetz@c...> wrote:
>
> Hi, I am looking for a source for a large ferrite bar.
> If anyone knows where I can get a 1" dia bar approximately 24" long I
> would appreciate a reply.

I know of no singe piece rods that size. But it is fairly easy to
assemble smaller pieces to approximate one. Digikey sells at least 3
materials in a large bead form, about 1 inch diameter, by 1.125 inch
long, with a half inch hole. If you lap the ends with some carbide
sandpaper on a sheet of glass, they stack with very small effective
gap between them. There is a picture of a foot long version in the
photo section of this group.

What is the maximum frequency you intend to use with your ferrite bar?

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42. Re: [ferriterodantennaexperimenters] Source for large Ferrite bar

Yahoo group: ferriterodantennaexperimenters
Date: 2006-01-09 23:54:37 UTC
From: Ed Spaetzel
Topic: 38 Message: 42

John,

I would prefer not to glue pieces together if at all possible, and the thing is that I would really like a very high permeable material, about 20,000.
I would think it's easier to get that kind of permeability in a solid (one piece) material than one that has been made from smaller parts.

I dont have anything to base this idea on except if you think in terms of resonance, it's easier to get one long solid part to resonate than if you have a part that is made from smaller parts. I dunno, maybe not.

Anyway, this core is for DC to about 10 Khz. I have another coil in progress that has an Iron core and should work on DC to about 100 Khz.

I guess the ferrite core would be ok for a wider range of frequencies than the Iron core.

Ed

"Long you'll live and high you'll fly,
but only if you ride the tide,
balanced on the biggest wave,
racing toward an early grave."

Pink Floyd
Dark Side of the Moon
----- Original Message -----
From: Stumm, John C
To: ferriterodantennaexperimenters@yahoogroups.com
Sent: Monday, January 09, 2006 6:32 PM
Subject: RE: [ferriterodantennaexperimenters] Source for large Ferrite bar

Ed,
Does it need to be a solid bar or could you possibly glue several ferrite cores together? I see large quantities sold on ebay.
And what's it for if I might ask? An ELF project?
Regards,
John

From: ferriterodantennaexperimenters@yahoogroups.com on behalf of spaetzel1
Sent: Mon 1/9/2006 12:47 AM
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: [ferriterodantennaexperimenters] Source for large Ferrite bar

Hi, I am looking for a source for a large ferrite bar.
If anyone knows where I can get a 1" dia bar approximately 24" long I would appreciate a reply.

Thanks and Best Regards to all.

Ed Spaetzel

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43. Re: Source for large Ferrite bar

Yahoo group: ferriterodantennaexperimenters
Date: 2006-01-10 00:09:35 UTC
From: John Popelish
Topic: 38 Message: 43

--- In ferriterodantennaexperimenters@yahoogroups.com, "Ed Spaetzel" <edspaetz@c...> wrote:
>
> John,
>
> I was actually looking for a single bar, but if that is unavailable, I may try assembling one from pieces.
>
> I plan to go to about 10 Khz with this one.
> I have another one in progress that only will go to 100 Hz.

For any frequency below 300kHz, the ideal part to assemble for a big rod would be Steward part # LFB259128-000 25.91 mm O.D., 12.83mm I.D, 28.58 mm long, though they cost about USD2 each. The material has a permeability of about 5000, flat from DC to 300kHz. It has a positive temperature coeficient of permeability, but you can use a tuning capacitor with a negative temperature coefficient to cancle some of that.

The beads are fired standing on end, and the bottom end gets a bit bumpy during the firing process. But the material is sandable with silicon carbide paper and the LF material is softer than the higher frequency stuff, so it isn't such a bad job. I have been working the ends down to flat with 320 grit paper, till I see an even frost across the surface (leaving the small edge radius on the ID and OD), and then polish it further with 600 grit paper, both on a piece of glass for a flat surface. You can test the flatness by rubbing two sanded cores together. The contact areas turn brown from the very fine ferrite powder that is produced by contact between the beads.

I have been putting a piece of vinyl tubing that is a close fit to the hole over a piece of threaded rod (to keep any excess epoxy from sticking the rod to the beads). Epoxy doesn't stick to vinyl or polyethylene. I put a nut and large washer with a small hole at one end, sit the tubing on the washer, and stack the beads on the washer, sliding them down over the tubing, applying a small ring of epoxy to the end of each before stacking the next one on. A slow rotation of each bead spreads the epoxy evenly around the circumference. Then I add a second washer on top of the stack, a stiff compression spring and tighten a second nut on top. If the cores look a bit crooked, you can press the stack against an aluminum angle or some other smooth grooove that you can wipe off any epoxy. After the epoxy cures, you can sand off any bumps, if you wish. Slower cure epoxy not only gives you more time to work, but provides a stronger bond.

44. Re: Iron wire as core material

Yahoo group: ferriterodantennaexperimenters
Date: 2006-01-10 23:58:37 UTC
From: John Popelish
Topic: 37 Message: 44

--- In ferriterodantennaexperimenters@yahoogroups.com, "John Popelish" <jpopelish@r...> wrote:
(snip)
> My first attempt was a bundle of 56 inch pieces of 16 ga. soft iron
> wire sold as tie wire for rebar.
(snip)
> The only tests I have performed, so far are a resistance test
> between wires (there is only an ohm or two between any of them,
> so the oxide was not a very effective insulation)
> and an inductance test with one of the test coils I have used
> with the ferrite rods. The inductance test indicates that the
> effective permeability (at about 60 kHz the meter applied)
> was about 500, or 1/10th as high as that of the low frequency
> beads.

I have made another example of a wire rod, this time getting 64 straighter and epoxy coated wires inside 58th inch. This time I annealed 18 foot sections by connecting my welder across them and let it run red hot for 60 seconds. The nI wiped a coating of epoxy on the wire, waited for it to harden and cut it into 1 foot lengths. I posted a picture in my album of the end of the assembled rod.

These wires also showed electrical contact, but the connections were, evidently, grinding smear on the cut ends. I soaked the ends in etchant for a few minutes and the resistance between wires rose to a good fraction of a megohm. This trick didn't work on the first rod. The inductance measurement (with the same coil I used for the first wire rod) rose about 25% even though I added only 14% more core strands. This increase must have come from some combination of annealing and insulating the wires better.

This is going to be core "D" that I will add to the array of test results.

I still haven't made the core with a bundle of 34 ga. iron wire.

My frequency counter should be here in a week so formal testing can resume.

45. Re: Iron wire as core material

Yahoo group: ferriterodantennaexperimenters
Date: 2006-01-15 20:47:28 UTC
From: John Popelish
Topic: 37 Message: 45

I have posted a picture in my album of the end of a wire core rod made with an unknown nmber of strands (about a thousand, I estimate) of 34 AWG wire of an umknown composition. It came from a cryptically labled spool of uncertain origin.

I thought it was just soft iron, but I couldn't get it to rust and when I etched the ends to clean up the smear, the wire developed a copper color. So I have some investigating to do, to see if I can identify the alloy, or at least, narrow it down, somewhat. All I know right now is that it has a diameter of about 6.4 mils, is silver looking, does not rust in the presence of salt or mild acid, and is strongly attracted to a magnet. I will add this rod to my test array as core "E".

47. Q versus coil position on rod

Yahoo group: ferriterodantennaexperimenters
Date: 2006-01-19 16:49:10 UTC
From: John Popelish
Topic: 47 Message: 47

Over on the loop antenna group, we have been talking about the Q of a ferrite rod antenna and why the coils on commercial antennas are usually seen mounted off center on the rod. One poster there, claimed that this improves the Q of antenna, but a couple others (me included) thought that this was just a way to adjust the antenna inductance during manufacturing. Since I am in the process of testing many aspects of rod antennas and accumulating data, I decided to add a few trials that vary the position of the coil on some rods and measure the resultant Q. Here is a copy of the post from loop antennas about the first results:

(begin paste)
I have tested two coil-rod combinations (pictures of the instrumentation and components used are in the Q versus coil position album under my name) for Q at 60 kHz and with coils centered on the rod, off center at the 1/3rd rod length and off center at the 3/4 rod length. Coil labeled 5 is 154 turns of 20 AWG, close wound (4 inch long coil). Coil labeled 12 is 316 turns of 20 AWG, close wound in two side-by-side 3 layer stacks, with a total coil length of about 3 and 3/4 inches.

The rod labeled A is an assembled stack of low frequency, u=5000 ferrite beads that have been lapped flat and glued together. Including the joints I estimate an effective permeability at between 2000 and 3000.

I measured the Q by setting the generator to very nearly 60 kHz, and tuned the variable capacitor for peak response. The signal generator is connected to the tuned circuit (coil connected across a 50 to ~1000 pf 3 section tuning capacitor with two switches to add 1 or 2 of 680 pf 100V polystyrene capacitors in parallel, as needed) through a 9 meg 10X scope probe. The resonant voltage is measured with an AC volt meter (10 meg input impedance fed by a second 9 meg 10X scope probe). The frequency counter is tied to the generator sync output, so it doesn't load the tank at all.

I set the signal amplitude to produce a 0 db peak reading on the decible scale when the voltage is on the .3 volt scale. I rock the frequency back and forth slowly, to verify that the resonant peak falls on 0 db. Then I find the two frequencies that drop the voltage by 3 db. The Q was calculated by dividing the square root of the product of those two frequencies by the difference of those two frequencies.

Measuring the Q was very tricky, because it was so high (the frequency adjustments were very touchy, so it took considerable effort to get 4

digit frequency readings). It mattered where I sat (I had to pick a position) and if I left any stray stuff on the plywood table. I got one much lower Q reading (than the previous result) and realized that I had left the steel rule on the table a foot from the rod. Do over.

Coil Core Location Q
5 A at 1/2 194
5 A at 1/3 154
5 A at 1/4 118

12 A at 1/2 62.6
12 A at 1/3 54.0
12 A at 1/4 41.9

Draw your own conclusions.
(end paste)

48. Re: Q versus coil position on rod

Yahoo group: ferriterodantennaexperimenters
Date: 2006-01-20 05:05:16 UTC
From: John Popelish
Topic: 47 Message: 48

--- In ferriterodantennaexperimenters@yahoogroups.com, "John Popelish" <jpopelish@r...> wrote:
>
> Over on the loop antenna group, we have been talking about the Q of a
> ferrite rod antenna and why the coils on commercial antennas are
> usually seen mounted off center on the rod.
(snip)

I made a small mistake in the previous post. I used a different coil than the one I photographed. The data is correct for this different coil. I'll replace the photo in a day or two. I'll correct the description, below, and I have gone back and measured the inductance of each case. I also cleaned up my tuning capacitor soldering and measured the actual range so I didn't have to guess. That change is included, also

(begin corrections and additions)

I have tested two coil-rod combinations (pictures of the instrumentation and components used are in the Q versus coil position album under my name) for Q at 60 kHz and with coils centered (at 1/2 the length) on the rod, off center at the 1/3rd rod length and off center at the 1/4 rod length.

Coil labeled 6 is 112 turns of 20 AWG, close wound (4 inch long coil).

Coil labeled 12 is 316 turns of 20 AWG, close wound in two side-by-side 3 layer stacks, with a total coil length of about 3 and 3/4 inches.

The rod labeled A is an assembled stack of low frequency, u=5000 ferrite beads that have been lapped flat and glued together. Including the joints I estimate an effective permeability at between 2000 and 3000.

I measured the Q by setting the generator to very nearly 60 kHz, and tuned the variable capacitor for peak response. The signal generator was connected to the tuned circuit (coil connected across a 50 pF to ~1980 pF of 3 section tuning capacitor with two switches to add 1 or 2 of 1680pF 100V polystyrene capacitors in parallel, as needed) through a 9 meg, 10X scope probe.

The resonant voltage was measured with an AC volt meter (10 meg input impedance fed by a second 9 meg 10X scope probe). The frequency counter is tied to the generator sync output,

so it doesn't load the antenna resonance at all.

I set the signal amplitude to produce a 0 db peak reading on the decible scale when the voltage is on the .3 volt scale (or lower when I run out of drive voltage, which is 15 volts max.). I rock the frequency back and forth slowly, to verify that the resonant peak falls on 0 db.

Then I find the two frequencies that drop the voltage by 3 db. The Q was calculated by dividing the square root of the product of those two frequencies by the difference of those two frequencies.

Measuring the Q was very tricky, because it was so high (the frequency adjustments were very touchy, so it took considerable effort to get 4 digit frequency readings). It mattered where I sat (I had to pick a position) and if I left any stray stuff on the plywood table. I got one much lower Q reading (than the previous result) and realized that I had left the steel rule (1 inch by 12 inch, shown in the components picture) on the table a foot from the rod. Do over.

I also measured the incuctance of each coil position with an Almost all digital L-C Meter model IIB, which resonates the inductance with an internal 680 pf capacitor.

Coil Core Location Q mHy
6 A at 1/2 194 2.49
6 A at 1/3 154 2.29
6 A at 1/4 118 1.99

12 A at 1/2 62.6 21.1
12 A at 1/3 54.0 19.3
12 A at 1/4 41.9 16.51

(end corrections and additions)

49. Re: Q versus coil position on rod

Yahoo group: ferriterodantennaexperimenters
Date: 2006-01-22 21:42:17 UTC
From: John Popelish
Topic: 47 Message: 49

--- In ferriterodantennaexperimenters@yahoogroups.com, "John Popelish" <jpopelish@r...> wrote:
It was suggested to me on the loop antenna group, that another way to make the Q versus position comparison would be to vary the turns at each position to hold the inductance constant. So I attempted that. Here is a clip from a post ot that group summarizing the results. And as soon as I gan get into the photo section (it is locking me out, at the moment) I will update the components photo to show the coil I added to the components used for this series of tests.

(Begin paste)
In this second pass, I attempted to keep the inductance constant for the three rod positions, by varying the number of turns (and thus, also varying the coil length, resistance and interwinding capacitance). In hind sight, I should have just measured the rod position that produced the exact same resonant frequency for each turns count variation, instead of trying to find the correct turns count for these three specific rod positions. But I came pretty close to the same inductance on the three cases with lots of cut and try.

First I measured the capacitance it took to resonate the original coil #6 (112 turns, close wound, single layer, 20 AWG) at 60 kHz, with the coil at the 1/4 position. That turned out to be roughly 3800pf.
I had some 2500pF and 1000pF polystyrene capacitors, so a paralleled one of each for an approximate 3500pF fixed tank capacitor.

I started with a 120 turn coil at the 1/4 position. Resonance was a little high but I decided to use that resonant frequency as my goal for the other two trials. The 1/3 position required that I unwind down to 98 turns to get about the same resonant frequency. I probably overshot a turn, but it was hard to put it back after I cut the wire off.

I unwound down to 95 turns for the 1/2 position (centered).

The first column is the turns count.
The second column is coil center as fraction of rod length.
The third is the resonant frequency in kHz with the 3500pF capacitor.
The fourth is the inductance calculated from the resonant frequency and the capacitance.
The fifth is the Q calculated the same way as before using the two -3db frequencies.

Turns	POS	kHz	mHy	Q
120	1/4	60.331	1.988	93.19
98	1/3	60.639	1.968	147.9
95	1/2	60.270	1.992	208.5

Off the top of my head, it looks like holding the inductance constant (by varying the turns count and coil length) appears to vary the Q more than using the same coil. But the high Q position is still at the center.
(end paste)

50. Format for test results

Yahoo group: ferriterodantennaexperimenters
Date: 2006-01-24 03:22:01 UTC
From: John Popelish
Topic: 50 Message: 50

I have now collected more than a hundred seperate test results and calculated another hundred or so from combinations of those. Does anyone have suggestions as to the format that I might use ot present the results? Some possibilities:

Text files and possibly accompanying image files

Excel spread sheets (makes formulas and intermediate results and all raw data available, and good for graphing. But not everyone has Excell. Plus I din't trust files from Microsoft packages, because they keep showing up with virii, inside.

Word documents. Good tables, but no live calculations. Same virus posibility as Excel.

PDF files. No live calculations, but everyone can get a free reader.

Other format???

As to content, should I try to roll out a massive chunk of data, or try to break it into comparisons of small, related groups, possibly with some repetition between different chunks?

You thoughts are appreciated.

51. Intro

Yahoo group: ferriterodantennaexperimenters
Date: 2006-01-22 19:11:21 UTC
From: W1EOF
Topic: 51 Message: 51

Helloo everybody...

My name is Mark. I'm an amateur radio operator (W1EOF) from North Kingstown, RI. Been a ham for 34 years. Love experimenting and building my own gear. I restore old radios and build replicas of radios from the 20s and 30s (GlowBugs). Although I love equipment using vacuum tubes that doesn't mean I'm not into solid state and technology! I work as an independent computer software developer and consultant. Before that I worked as a Test Engineer for an electronic components company.

The past few years I've gotten more and more interested in the VLF-ELF-ULF part of the spectrum. For whatever reason that interests me more than microwaves. I also love playing with antennas. I'm trying to learn as much as I can about loops (receiving) and ferrite antennas. That's why I'm here. Of course I'm more than willing to share my victories and defeats with all of you.

I know there is a lot of stuff on the internet regarding ferrite bar antennas but is there a particular website you could recommend to me to get started?

Thanks.

Mark
--
No virus found in this outgoing message.
Checked by AVG Free Edition.
Version: 7.1.375 / Virus Database: 267.14.21/236 - Release Date: 1/20/06

52. RE: [ferriterodantennaexperimenters] Intro

Yahoo group: ferriterodantennaexperimenters
Date: 2006-01-24 20:40:08 UTC
From: Stumm, John C
Topic: 51 Message: 52

Hi Mark,
I would first recommend "Doug's R-E Loop Article Page"
http://user:netonecom.net/swordman/Radio/re-loop-article.htm

Then there's Lloyd Butler's Receiving loop aerials for 1.8MHz
http://www4.tpgi.com.au/users/ldbutler/Loop18MHz.htm

Or there a lot of discussion on loop antennas of all sorts at:
loopantennas@yahoogroups.com

There's lots of info out there. Basic searches got me going...

Welcome aboard!

John

-----Original Message-----
From: ferriterodantennaexperimenters@yahoogroups.com
[mailto:ferriterodantennaexperimenters@yahoogroups.com] On Behalf Of
W1EOF
Sent: Sunday, January 22, 2006 11:11 AM
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: [ferriterodantennaexperimenters] Intro

Helloo everybody...

My name is Mark. I'm an amateur radio operator (W1EOF) from North
Kingstown,
RI. Been a ham for 34 years. Love experimenting and building my own
gear. I
restore old radios and build replicas of radios from the 20s and 30s
(GlowBugs). Although I love equipment using vacuum tubes that doesn't
mean
I'm not into solid state and technology! I work as an independent
computer
software developer and consultant. Before that I worked as a Test
Engineer
for an electronic components company.

The past few years I've gotten more and more interested in the
VLF-ELF-ULF
part of the spectrum. For whatever reason that interests me more than
microwaves. I also love playing with antennas. I'm trying to learn as
much
as I can about loops (receiving) and ferrite antennas. That's why I'm
here.
Of course I'm more than willing to share my victories and defeats with

all
of you.

I know there is a lot of stuff on the internet regarding ferrite bar antennas but is there a particular website you could recommend to me to get
started?

Thanks.

Mark
--
No virus found in this outgoing message.
Checked by AVG Free Edition.
Version: 7.1.375 / Virus Database: 267.14.21/236 - Release Date: 1/20/06

Yahoo! Groups Links

53. Re: [ferriterodantennaexperimenters] Intro

Yahoo group: ferriterodantennaexperimenters
Date: 2006-01-25 01:14:10 UTC
From: Russell Shaw
Topic: 51 Message: 53

Russell Shaw wrote:
> Stumm, John C wrote:
>
>> Hi Mark,
>> I would first recommend "Doug's R-E Loop Article Page"
>> http://user:netonecom.net/swordman/Radio/re-loop-article.htm
>
> I-design logo
>
>
> Warning icon Oh, no! The dreaded "Page not found" error!
>
> The page you're looking for isn't there. We're sorry, it's probably our
> fault.
>
>
>
> Try one of these options:
>
> Please send a note so we can figure out why this happens.
>
> If you typed in the Web address check to be sure you typed it right.
>
> Try main areas on this site: Home page, Services, Design, Portfolio,
> Research, Book list , About us.
>
> Go back to the previous page

Maybe it's this one:

http://users.netonecom.net/~swordman/Radio/re-loop-article.htm

54. Re: [ferriterodantennaexperimenters] Intro

Yahoo group: ferriterodantennaexperimenters
Date: 2006-01-25 01:12:31 UTC
From: Russell Shaw
Topic: 51 Message: 54

Stumm, John C wrote:
> Hi Mark,
> I would first recommend "Doug's R-E Loop Article Page"
> http://user:netonecom.net/swordman/Radio/re-loop-article.htm

I-design logo

Warning icon Oh, no! The dreaded "Page not found" error!

The page you're looking for isn't there. We're sorry, it's probably our fault.

Try one of these options:

Please send a note so we can figure out why this happens.

If you typed in the Web address check to be sure you typed it right.

Try main areas on this site: Home page, Services, Design, Portfolio, Research, Book list , About us.

Go back to the previous page

55. RE: [ferriterodantennaexperimenters] Intro

Yahoo group: ferriterodantennaexperimenters
Date: 2006-01-25 17:47:05 UTC
From: Stumm, John C
Topic: 51 Message: 55

Yep, That the one!

>Maybe it's this one:

http://users.netonecom.net/~swordman/Radio/re-loop-article.htm

56. Re: Source for large Ferrite bar

Yahoo group: ferriterodantennaexperimenters
Date: 2006-01-26 01:28:33 UTC
From: Danny R. Barnes
Topic: 38 Message: 56

--- In ferriterodantennaexperimenters@yahoogroups.com, "spaetzel1" <edspaetz@c...> wrote:
>
> Hi, I am looking for a source for a large ferrite bar.
> If anyone knows where I can get a 1" dia bar approximately 24" long I
> would appreciate a reply.
>
> Thanks and Best Regards to all.
>
> Ed Spaetzel
>

Hi, This is my first message to the group as I am a new member. Here is a link to a site that may have what a lot of our members might like to get and use. the site has rods, variable capactors and many other products we may be able to use in this group. I'll also put the link into the links section.

http://www.stormwise.com/vlf.htm

57. Re: Source for large Ferrite bar

Yahoo group: ferriterodantennaexperimenters
Date: 2006-01-26 05:28:31 UTC
From: John Popelish
Topic: 38 Message: 57

--- In ferriterodantennaexperimenters@yahoogroups.com, "Danny R. Barnes" <danny315@h...> wrote:

> ...Here is a link to a site that may have what a lot of
> our members might like to get and use.
> the site has rods, variable capactors and many other products
> we may be able to use in this group.
> I'll also put the link into the links section.
>
> http://www.stormwise.com/vlf.htm

Have you dissected one of these rods to see how much ferrite they contain? If you solve for the weight of ferrite based on the given magnetic path diameter, length and the density of ordinary 850 u ferrite (4.9g/cm^3) the 3.4 inch rod (by 1.12 diameter) should have 9.5 oz of ferrite in it, not 7 oz as slecified. The 24.75 inch rod contain 4.3 pounds of ferrite, not the 2.36 pounds specified.

Evidently, the "rods" are either made of stacks of hollow beads, bundles of smaller rods, or some form (packed powder?). But at least, they tell you the weight of ferrite they contain. My main gripe with these rods is all the pipe they include, especially the large ends that require you to use even larger forms to wind on, if you want to be able to slide the coil over the end. My second gripe is that the 850 u material is not nearly so useful below 1 MHz as the higher permeable materials are. My experiments indicate almost a factor of 10 improvement in Q at 60 kHz with 5000 u material.

By the way, you can buy large ferrite beads from many sources, including Digikey and stack then into similar rods, if you like. Material is available to assemble hollow rods of many sizes and proportions, including ones quite a bit larger than these, if you want a real signal "magnet". Not only might this exercise be educational and satisfying, but you can make a few for what Stormwise will sell you one.

58. First two chapters

Yahoo group: ferriterodantennaexperimenters
Date: 2006-01-30 03:21:04 UTC
From: John Popelish
Topic: 58 Message: 58

I have uploaded two files (in a folder with my name)that describe the coils and cores I used for my first ropund of tests, and test results of the inherent properties of combinations of those coils and cores. I decided to post these in rich text format, because almost ay word processing or web browsing softeware can show these, and the tables I used to display the data are supported.

I have a few outstanding issues to resolve, but didn't want to hold up the early presentation till those were resolved. I am hoping discussion of these devices, methods and results may lead to refinements.

The next chapter will report the test results of tuned Q with direct electrical 60 kHz drive and inside the field coil, and signal sensitivity in the field coil. That data has been collected, but not yet written up.

59. New file uploaded to ferriterodantennaexperimenters

Yahoo group: ferriterodantennaexperimenters
Date: 2006-02-02 04:10:33 UTC
From: ferriterodantennaexperimenters@yahoogrou
Topic: 59 Message: 59

Hello,

This email message is a notification to let you know that
a file has been uploaded to the Files area of the ferriterodantennaexperimenters
group.

File : /Popelish/Ferrite rod experiments Chapter 3.rtf
Uploaded by : jpopelish <jpopelish@...>
Description : 60 kHz tests

You can access this file at the URL:
http://groups.yahoo.com/group/ferriterodantennaexperimenters/files/Popelish/Ferrite%20rod%20experiments%20Chapter%203.rtf

To learn more about file sharing for your group, please visit:
http://help.yahoo.com/help/us/groups/files

Regards,

jpopelish <jpopelish@...>

60. Chapter 3, 60 kHz tests

Yahoo group: ferriterodantennaexperimenters
Date: 2006-02-02 04:36:08 UTC
From: John Popelish
Topic: 60 Message: 60

I have just uploaded to my files folder, chapter 3 of the test results of various ferrite antenna coil and core combinations. This is the test results at 60 kHz.

Comments and suggestions welcome.

61. Effect of Distributed gaps on ferrite rod antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2006-02-18 21:43:00 UTC
From: John Popelish
Topic: 61 Message: 61

I have just uploaded in my folder a file containing a description of an experiment to see the effect on antenna Q of adding gaps between segments of ferrite making up the rod. The test included 3 types of ferrite.

Criticism and suggestions welcome.

62. Anybody want to test an antenna for me and the group?

Yahoo group: ferriterodantennaexperimenters
Date: 2006-03-04 04:22:15 UTC
From: John Popelish
Topic: 62 Message: 62

I have been experimenting for a month or two, with ferrite rod antennas, made of stacks of ferrite beads. But I don't yet have much in the way of receivers.

Is there anybody in this group who would like to try out one of my designs, to see how it works as a signal catcher and report to the group? At this point, I think I can make something functional for a some band between about 10kHz to about 10 MHz. I need specs for the intended band and either inductance or resonant frequency in parallel with a given capacitance to achieve resonance at a given frequency, and any output winding needed, if a high impedance preamp is not to be used. I am willing to lend an antenna, or to sell the unit for my cost, to get some feedback on performance.

Let me know if you are interested, and perhaps we can come to an agreement.

63. RE: [ferriterodantennaexperimenters] Anybody want to test an antenna for me and the group?

Yahoo group: ferriterodantennaexperimenters
Date: 2006-03-04 20:36:53 UTC
From: Stumm, John C
Topic: 62 Message: 63

John,
I currently use a Palomar LA-1 for testing my custom loops on.
I'd be happy to test your rod in my test loop that accepts various
cores.
(I believe you commented on it earlier)
It would be interesting to see how it "stacks up" against mine!
I'll gladly pay for it if you'd like.

John

>I have been experimenting for a month or two, with ferrite rod
>antennas, made of stacks of ferrite beads. But I don't yet have much
>in the way of receivers.

>Is there anybody in this group who would like to try out one of my
>designs, to see how it works as a signal catcher and report to the
>group? At this point, I think I can make something functional for a
>some band between about 10kHz to about 10 MHz. I need specs for the
>intended band and either inductance or resonant frequency in parallel
>with a given capacitance to achieve resonance at a given frequency,
>and any output winding needed, if a high impedance preamp is not to be
>used. I am willing to lend an antenna, or to sell the unit for my
>cost, to get some feedback on performance.

>Let me know if you are interested, and perhaps we can come to an
>agreement.

Yahoo! Groups Links

64. Re: Anybody want to test an antenna for me and the group?

Yahoo group: ferriterodantennaexperimenters
Date: 2006-03-05 01:31:53 UTC
From: John Popelish
Topic: 62 Message: 64

--- In ferriterodantennaexperimenters@yahoogroups.com, "Stumm, John C" <jcstumm@...> wrote:
> >Is there anybody in this group who would like to try out one of my
> >designs, to see how it works as a signal catcher and report to the
> >group?
(snip)

> John,
> I currently use a Palomar LA-1 for testing my custom loops on.
> I'd be happy to test your rod in my test loop that accepts various
> cores.
> (I believe you commented on it earlier)
> It would be interesting to see how it "stacks up" against mine!
> I'll gladly pay for it if you'd like.

I would like to attempt the whole design, rod and coil (and maybe preamp). But I could make it so the rod was removable for you to try with your coil.

I have no idea what you receive on your LA-1.

What frequency band would you like the antenna to cover?

Does your set-up include a tuning capacitor for the antenna, or does that need to be included?

Does the LA-1 have a high input impedance or something like 300 or 50 ohms, balanced or single ended?

What signal connector would make sense on the antenna?

I'm hoping to blow the doors off what you have been using. ;-)

I would be happy to lend it to you, and after testing, if you are pleased with it, but don't want to copy it, we can talk about money. I may go into business after I learn all I can about these thingies.

65. RE: [ferriterodantennaexperimenters] Re: Anybody want to test an antenna for me and the group?

Yahoo group: ferriterodantennaexperimenters
Date: 2006-03-05 04:11:19 UTC
From: Stumm, John C
Topic: 62 Message: 65
Attachments: 1 described; binary payloads are missing from this source WARC

>I would like to attempt the whole design, rod and coil (and maybe
>preamp). But I could make it so the rod was removable for you to try
>with your coil.

That's good by me I know you have your concepts of what constitutes an optimum rod (which i thought was your major precept) vs coil configuation. If you have a coil that you see as competitive...

>I have no idea what you receive on your LA-1.

I have loops that span the LW, (above 200Khz, and several that cover th MW band.
I have one that came with the LA-1 for 160/80 meter coverage

>What frequency band would you like the antenna to cover?

I concentrate in the MW band. Around 200uh

>Does your set-up include a tuning capacitor for the antenna, or does
>that need to be included?

The LA--1 has a built in dual ganged cap designed for balanced inputs

>Does the LA-1 have a high input impedance or something like 300 or 50
>ohms, balanced or single ended?

It's high imp. balanced input

What signal connector would make sense on the antenna?

It's a standard 1/4" stereo headphone jack. If that's what you mean.

>I'm hoping to blow the doors off what you have been using. ;-)

I'm your huckleberry...
The large capture area of the loop I have combined with the massive ferrite
bar i employ is a one-two punch that's hard to beat. (Sorry, I'm watching fight night)

>I would be happy to lend it to you, and after testing, if you are
>pleased with it, but don't want to copy it, we can talk about money.
>I may go into business after I learn all I can about these thingies.

OK that's fine,
I'm thinking about that business thing too, only with air loops, though
Judging from how Paul is doing on e-bay, (id - Vanagon)
He's doing better with his ferrite loops.

Let's get ready to rumble...

Yahoo! Groups Links

66. Re: Anybody want to test an antenna for me and the group?

Yahoo group: ferriterodantennaexperimenters
Date: 2006-03-05 04:45:18 UTC
From: John Popelish
Topic: 62 Message: 66

--- In ferriterodantennaexperimenters@yahoogroups.com, "Stumm, John C" <jcstumm@...> wrote:
(snip)
> >What frequency band would you like the antenna to cover?
>
> I concentrate in the MW band. Around 200uh

Okay, nominal inductance will be 200 uHy. Is MW band essentially 530kHz to 1620kHz? If so, I will optimize response at about 927kHz (the geometric mean of those extremes). I have a local transmitter at 970 kHz I can use to tweak the signal output. Having a center frequency spec and a pair of extremes makes optimizing the rod and coil a lot more straight forward trial and error process. I will shoot for optimum Q near the center frequency, with similar roll off at the two extremes.

> >Does your set-up include a tuning capacitor for the antenna, or does
> >that need to be included?
>
> The LA--1 has a built in dual ganged cap designed for balanced inputs

Excellent!

> >Does the LA-1 have a high input impedance or something like 300 or 50
> >ohms, balanced or single ended?
>
> It's high imp. balanced input

A completely balanced design it shall be.

> What signal connector would make sense on the antenna?
>
> It's a standard 1/4" stereo headphone jack. If that's what you mean.

Would you like to have a short pig tail (how long?) with one of these plugs mounted? Or would it be better if the antenna had a similar jack on its shield, so you could use a patch cord of your own with a plug on each end?

> >I'm hoping to blow the doors off what you have been using. ;-)
>
> I'm your huckleberry...

Sounds good, what ever it means!

> The large capture area of the loop I have combined with the massive ferrite

> bar i employ is a one-two punch that's hard to beat. (Sorry, I'm watching fight night)

Okay, then, I will have to compete with a pretty large rod. I think I have a good stock of ferrite for this band. I can make one held together with a 1 foot threaded nylon rod, if you would like to be able to take it apart and experiment with alterations, after trying my design. But I could make a longer one without that truss rod.

Is there a mount that you prefer? I saw lots of pipe fittings on your designs. Is there a size that would fit what you have on the LA-1?

67. RE: [ferriterodantennaexperimenters] Re: Anybody want to test an antenna for me and the group?

Yahoo group: ferriterodantennaexperimenters
Date: 2006-03-05 05:10:30 UTC
From: Stumm, John C
Topic: 62 Message: 67
Attachments: 1 described; binary payloads are missing from this source WARC

```
>Okay, nominal inductance will be 200 uHy. Is MW band essentially
>530kHz to 1620kHz?
Yes

>If so, I will optimize response at about 927kHz
.>(the geometric mean of those extremes). I have a local transmitter at
>70 kHz I can use to tweak the signal output. Having a center
.>frequency spec and a pair of extremes makes optimizing the rod and
>coil a lot more straight forward trial and error process. I will
>shoot for optimum Q near the center frequency, with similar roll off
>at the two extremes

Sound good!

>Would you like to have a short pig tail (how long?) with one of these
>plugs mounted? Or would it be better if the antenna had a similar
>jack on its shield, so you could use a patch cord of your own with a
>plug on each end?

The latter is preferable

> >I'm hoping to blow the doors off what you have been using. ;-)
>
> I'm your huckleberry...

>Sounds good, what ever it means!

The right man for the job!

> The large capture area of the loop I have combined with the massive
ferrite
> bar i employ is a one-two punch that's hard to beat. (Sorry, I'm
watching fight night)

>Okay, then, I will have to compete with a pretty large rod. I think I
>have a good stock of ferrite for this band. I can make one held
>together with a 1 foot threaded nylon rod, if you would like to be
>a.ble to take it apart and experiment with alterations, after trying my
>design. But I could make a longer one without that truss rod.

I'm using 18 -19" rods

>Is there a mount that you prefer? I saw lots of pipe fittings on your
>designs. Is there a size that would fit what you have on the LA-1?

Nope, That's the beauty of PVC, 3/4" or 1" is what i nornally employ.
```

Send me a message at jcstumm@sycamore.com and i'll give you mailing instructions

Yahoo! Groups Links

68. Re: Anybody want to test an antenna for me and the group?

Yahoo group: ferriterodantennaexperimenters
Date: 2006-03-25 19:58:13 UTC
From: John Popelish
Topic: 62 Message: 68

I have put a photo up in a folder called jpopelish (my old popelish folder is no longer available to me, since the Yahoo photo section reorganization). It shows the general features of the ferrite rod antenna I intend to send to Iowalacrity for testing.

Inductance measures roughly 208 uHy.
Q at 1.7MHz about 160.
Q at 930 kHz roughly 250.
Q at 500kHz roughly 270.

I say "roughly", because my 57 year old Boonton 160A Q meter started acting silly (I suspect the supply filter is failing) so these suddenly became hard to measure consistently.

I am assuming that the amplifier to be connected will lower these Qs, somwhat. The Q at the low end may be too high to receive full audio bandwidth.

The rod is made of two sizes of Steward beads 28. On each end there are 5 each 15.9 mm diameter by 28.6 mm long beads (# 28B0631-100) The center section is 10 each of 17.4 mm diameter by 28.6 mm long beads (# 28B0686-200).

The gaps (in mils) between the beads are symmetrical about the center and are as follows (for one half, with "-" representing a 15.9 mm bead and "=" representing a 17.4 mm bead):

end -5.5-5.5-5.5-5.5-5.5=11=66=16.5=16.5=66 center

The large center gap (between the two coil halves) is the main compromise between coil inductance and Q for the high frequency end of the range, while the two large gaps (on each side of the middle 6 beads) set how isolated the center resonator core section is from the field collecting end sections, allowing a higher possible Q range with this lossy ferrite, These were adjusted to pick a compromise between untuned signal sensitivity and tuned Q. The gaps in the end sections are insignificant (limit the permeability, there to less than 200), compared to the other much larger gaps, and are essentially padding between the beads to prevent breakage if the unit is dropped.

The coil has a pair of 30 turn sections of 20 AWG PVC insulated solid wire, wound on an hour glass shapped form made of foam, with the outside turns (about 2" diameter) being the electrical center tap and the ends near the physical center (about 1" in diameter) being the output. Though I promissed a shielded coil, I found that reasonable sized shields lowered the Q too much with a large coil such as this. But this coil form is somewhat self shielding.

The electrical center tap (outside ends) is grounded to a brass shield tube that is inside the 11 inch long center stand leg, and the two coil ends pass through this brass tube inside foam tubes to minimize their capacitance to each other and to the shield. The coil and ground tube terminate into a 1.4 inch stereo plug at the bottom, to be inserted into the jack on a Palomer Engineering LA-1 differential tuner and preamp.

Now, I have to find a big flat box to send this unwieldly thing.

69. New to group

Yahoo group: ferriterodantennaexperimenters
Date: 2006-03-28 23:59:08 UTC
From: jllamb62
Topic: 69 Message: 69

Hello,
My name is Jim Lamb and I live in southwestern Indiana. I will be retiring soon and I want to get back into building radios and other electronic devices.
Several years ago I was an avid shortwave listener, I still have my Drake receivers,SPR4 and R4C, old but reliable. I got out my old radio parts and started gathering new information.
I want to get into longwave, mediumwave, and vhf as well as shortwave . I also want to experiment with antennas, dipole, vertical,etc.
I live in the country on 18 acres so space will not be a problem.
I am looking forward to participating in the group.
Jim

70. RE: [ferriterodantennaexperimenters] New to group

Yahoo group: ferriterodantennaexperimenters
Date: 2006-03-29 02:27:50 UTC
From: Stumm, John C
Topic: 69 Message: 70
Attachments: 1 described; binary payloads are missing from this source WARC

>Hello,
>My name is Jim Lamb and I live in southwestern Indiana. I will be
>retiring soon and I want to get back into building radios and other
>electronic devices.
>Several years ago I was an avid shortwave listener, I still have my
>Drake receivers,SPR4 and R4C, old but reliable. I got out my old radio
>parts and started gathering new information.
>I want to get into longwave, mediumwave, and vhf as well as
>shortwave . I also want to experiment with antennas, dipole,
>vertical,etc.
>I live in the country on 18 acres so space will not be a problem.
>I am looking forward to participating in the group.
>Jim

Hi Jim,
Welcome to the group. It isn't the most active one around, but, if you're into or want to get into ferrite loop antennas, this is the one!
I noticed that you joined several others too. Loopantennas is a very good one for loops in general. Shortwave_radios is good too. There's a ton of info in the various group archives.
Happy building!

John

Y

71. Stereo antennas

Yahoo group: ferriterodantennaexperimenters
Date: 2006-04-01 20:43:22 UTC
From: jllamb62
Topic: 71 Message: 71

I have several antennas taken from the backs of stereo receivers, are these usable as is and is there a method to the color coding of the wire?
Or do I need to take them apart and just use the rods?
Or none of the above?
Jim

72. RE: [ferriterodantennaexperimenters] Stereo antennas

Yahoo group: ferriterodantennaexperimenters
Date: 2006-04-04 22:24:25 UTC
From: Stumm, John C
Topic: 71 Message: 72

>I have several antennas taken from the backs of stereo receivers, are
>these usable as is and is there a method to the color coding of the
>wire?
>Or do I need to take them apart and just use the rods?
>Or none of the above?
>Jim

Jim,
I just salvage the rods. They're too small to use individually. (at least for me) They are usually wound with litz wire, (two windings) and would be difficult to try to match up to another rig as is. You could spool and spice the litz together also. I just buy my mine in bulk from Vanagon on ebay. (litz that is)

P.S.
I have downloaded a pic of my latest plug in for my Palomar. It works well in the BCB without even needing a ferrite core. It is the only head that I have that beats out my 4 ft air loop. My latest test station, 1260 Khz in LA. (200 mi away over mountains), isn't even audible to the unaided receiver. The best signal strength I've attained with previous plug-ins, and the 4 ft solenoid, is an S-4, The Mondo loop plug-in brings a solid S-5.
John Popelish - my bench is ready for yours, the marks are set.
I know this one is cheating. Capture area is rather large to make comparisons fair. Our test parameters will be similar.

John

Yahoo! Groups Links

73. Re: [BULK]RE: [ferriterodantennaexperimenters] Stereo antennas

Yahoo group: ferriterodantennaexperimenters
Date: 2006-04-04 22:56:33 UTC
From: John Popelish
Topic: 71 Message: 73

Stumm, John C wrote:
(snip)
> John Popelish - my bench is ready for yours, the marks are set.
> I know this one is cheating. Capture area is rather large to make
> comparisons fair. Our test parameters will be similar.

According to UPS tracking package # 1Z 291 X43 03 7525 067 5, the antenna arrived in Vernan CA at 7:10, this morning. Scheduled for delivery tomorrow.

74. Calculating rod material permeability

Yahoo group: ferriterodantennaexperimenters
Date: 2006-04-05 03:03:56 UTC
From: John Popelish
Topic: 74 Message: 74

I have some unidentified ferrite material I am trying to characterize.
The rod is 195mm long and 6.33mm in diameter.

I made a small test coil that slips over the rod, 10 mm long.
The coil inductance is about .447 uHy,
and the inductance with the rod centered on the coil
is about 6.744uHy.

I went to the Amidon rod antenna information page:
http://www.amidoncorp.com/aai_ferriterods.htm
and tried to apply these values with their formulas to get a graphical
approximation (from the graph at the bottom) of the material
permeability from the inductancew ratio and coil and rod dimensions.
But their formulas make little sense to me. There is initial
permeability, effective permeability, and corrected permeability, and
I am having trouble understanding their definitions.

Can anyone help mme transform my inductance measurements and
dimensions into material permeability? Thanks.

75. RE: [ferriterodantennaexperimenters] Re: Anybody want to test an antenna for me and the group?

Yahoo group: ferriterodantennaexperimenters
Date: 2006-04-10 20:39:22 UTC
From: Stumm, John C
Topic: 62 Message: 75

>The large center gap (between the two coil halves) is the main
>compromise between coil inductance and Q for the high frequency end of
>the range, while the two large gaps (on each side of the middle 6
>beads) set how isolated the center resonator core section is from the
>field collecting end sections, allowing a higher possible Q range with
>this lossy ferrite, These were adjusted to pick a compromise between
>untuned signal sensitivity and tuned Q. The gaps in the end sections
>are insignificant (limit the permeability, there to less than 200),
>compared to the other much larger gaps, and are essentially padding
>between the beads to prevent breakage if the unit is dropped.

>The coil has a pair of 30 turn sections of 20 AWG PVC insulated solid
>wire, wound on an hour glass shapped form made of foam, with the
>outside turns (about 2" diameter) being the electrical center tap and
>the ends near the physical center (about 1" in diameter) being the
>output. Though I promissed a shielded coil, I found that reasonable
>sized shields lowered the Q too much with a large coil such as this.
>But this coil form is somewhat self shielding.

>The electrical center tap (outside ends) is grounded to a brass shield
>tube that is inside the 11 inch long center stand leg, and the two
>coil ends pass through this brass tube inside foam tubes to minimize
>their capacitance to each other and to the shield. The coil and
>ground tube terminate into a 1.4 inch stereo plug at the bottom, to be
>inserted into the jack on a Palomer Engineering LA-1 differential
>tuner and preamp.

Hello John and group,
Prelim testing revealed some interesting findings. I set up my test bench outside to be free from obstructions and potential noise sources. Little did I know that this would be a good year for the pineapple express! (rain pattern off the Pacific) More rain due this week. Anyway, in comparing my loops with john's design, I have to say his stacks up very well. This is especially true at the bottom end of the BCB. At the top end, my big fella was the only one that did marginally better, (1 S-unit). At the low end though, everything stated to even out sensitivity wise. The same with nulling ability. In my quest to find a suitable station, I hit upon a highway sigalert station at 530khz located some 15 miles away. Inaudible to the unaided receiver, it was fairly audible thru the mud using John's loop and my larger ones, (all producing a steady S-4) Mind you his loop is dwarfed by some of mine. Where his really shined was with its noise rejection ability. In trying to pull in a really weak signal at the bottom of the band, (noisier there anyway) there was a noise issue, not least of which was a drone

from the digital display in the radio, a Radio Shack DX-392. My loops were picking it up at some distance, up to two feet - 3 feet with my big one. John's loop was totally impervious to it! I even put the radio display right up to his loop, nothing. I tried grounding my center tap, noise still prevalent. I noticed that with John's loop, the ends are grounded and the center is split out. I will have to try this with one of mine to see if it helps. All-in-all, from what I've seen so far, his is coming out an all around winner. Bravo!

Regards,
John

76. active turnable ferrite loop antenna contruction advice needed

Yahoo group: ferriterodantennaexperimenters
Date: 2006-04-10 18:21:23 UTC
From: Aimo Unto Olavi RUOHO
Topic: 76 Message: 76

Hi!
I am interested to construct a turnable ferrite rod antenna to be used with my ready made wide band antenna amplifier.
Does any one have a schematic + possibly instructions to put the parts together? A clear drawing would help a lot...
Or, if there is an address to look for in the internet, I would be happy to know about it.
I'd be very glad and thankful to receive help.
ami

77. Re: Anybody want to test an antenna for me and the group?

Yahoo group: ferriterodantennaexperimenters
Date: 2006-04-12 03:25:12 UTC
From: John Popelish
Topic: 62 Message: 77

Stumm, John C wrote:
(snip)
> Where his really shined was with its noise rejection ability. In trying
> to pull in a really weak signal at the bottom of the band, (noisier
> there anyway) there was a noise issue, not least of which was a drone
> from the digital display in the radio, a Radio Shack DX-392. My loops
> were picking it up at some distance, up to two feet - 3 feet with my big
> one. John's loop was totally impervious to it! I even put the radio
> display right up to his loop, nothing. I tried grounding my center tap,
> noise still prevalent. I noticed that with John's loop, the ends are
> grounded and the center is split out. I will have to try this with one
> of mine to see if it helps.

I think a large part of this immunity may be the shield tube the coil
ends are route through, to the plug. I notice that you surround a
fair area with your coil ends, on the way to the plug. This forms a
second loop of one turn, at right angle to the one with a rod through
it. It also adds to the capacitive pickup area.

> All-in-all, from what I've seen so far, his is coming out an all around winner.
> Bravo!

I am gratified to see that my instrument tests correlate with useful
function.

I have been thinking about the LA-1 preamp and tuner you used for this
testing, and how an antenna might be optimized to work through it.

Is there a schematic available for this device?

78. RE: [ferriterodantennaexperimenters] Re: Anybody want to test an antenna for me and the group?

Yahoo group: ferriterodantennaexperimenters
Date: 2006-04-12 18:02:20 UTC
From: Stumm, John C
Topic: 62 Message: 78
Attachments: 1 described; binary payloads are missing from this source WARC

>I think a large part of this immunity may be the shield tube the coil
>ends are route through, to the plug. I notice that you surround a
>fair area with your coil ends, on the way to the plug. This forms a
>second loop of one turn, at right angle to the one with a rod through
>it. It also adds to the capacitive pickup area.

I was thinking along those line too. I tried to modify one of my existing loops but was not able to recreate the noise cancelling effect. I ended up rewinding my readily accepts dirrerent cores frame with a loop similar to yours, (see pic), it has the same pronounced noise immunity as yours but without the lead wire shielding. This leads me to believe it is the way the loop connects to the balanced input - effectively reducing CM noise? Other e-field sources that are still there don't seem to be any less attenuated, but, I'm comparing it to other loops - which already have those properties. I will have to set up a rig with similar sensitivity, but not loop assisted to see if this is the case.

>I have been thinking about the LA-1 preamp and tuner you used for this
>testing, and how an antenna might be optimized to work through it.

>Is there a schematic available for this device?

No I don't have one, but, there isn't much to the board anyway, a balanced pair of MPF102's feeding a 2n2222! That's it basically. See the link below for a design that's balanced all the way thru. If you'd like, I could probably trace out the board, or, at least the front end if like the cascoded model better.

http://www.qsl.net/wa1ion/loop/bfe_c.htm

Lyle koehler's web site has an excellent design too! I've used the varactor tuner section
http://www.mlecmn.net/~lyle/bal-pre/bal-pre.htm

john

79. Re: Anybody want to test an antenna for me and the group?

Yahoo group: ferriterodantennaexperimenters
Date: 2006-04-12 19:14:10 UTC
From: John Popelish
Topic: 62 Message: 79

--- In ferriterodantennaexperimenters@yahoogroups.com, "Stumm, John C" <jcstumm@...> wrote:
> JohnPopelish wrote:
(snip)
> >I have been thinking about the LA-1 preamp and tuner you used for this
> >testing, and how an antenna might be optimized to work through it.
>
> >Is there a schematic available for this device?
>
> No I don't have one, but, there isn't much to the board anyway, a balanced pair of MPF102's feeding a 2n2222! That's it basically. See the link below for a design that's balanced all the way thru. If you'd like, I could probably trace out the board, or, at least the front end if like the cascoded model better.

I think it would be a useful bit of information, if you happen to have it open, sometime.

> http://www.qsl.net/wa1ion/loop/bfe_c.htm

Man! I don't care for that design at all. It has a high input capacitance, because of miller feedback and voltage gain at the input stage, a series resonant (and therefore low impedance) input at 7 MHz, and is overly complex for what those parts are doing. For instance, the pair of 1uHy drain inductors appear to do nothing (at least, below the 7 MHz peak). The simple, wideband, high input impedance, differential amplifier I posted to the files sections beats this one in almost every respect, if it works as I think it does, especially in parts count. I intend to build it soon, and will let you know.

80. Re: Anybody want to test an antenna for me and the group?

Yahoo group: ferriterodantennaexperimenters
Date: 2006-04-12 23:41:15 UTC
From: John Popelish
Topic: 62 Message: 80

--- In ferriterodantennaexperimenters@yahoogroups.com, "Stumm, John C" <jcstumm@...> wrote:
(snip)
> >Is there a schematic available for this device?
>
> No I don't have one, but, there isn't much to the board anyway, a balanced pair of MPF102's feeding a 2n2222! That's it basically.
(snip)

Is the tuning capacitor a balanced design (butterfly type) or an ordinary frame and rotor type? I am wondering how well they balance the tuning capacitor to the case. Or are they just pretending this unit has a balanced input?

81. RE: [ferriterodantennaexperimenters] Re: Anybody want to test an antenna for me and the group?

Yahoo group: ferriterodantennaexperimenters
Date: 2006-04-13 02:12:27 UTC
From: Stumm, John C
Topic: 62 Message: 81
Attachments: 1 described; binary payloads are missing from this source WARC

It is a dual ordinary frame and rotor type with equal sides. They are lashed together to form one large variable that tunes the loop plug-in,(sleeve and tip) Both of which are across the gates of the fETs. The parts count is very low indeed. Three transistors, 5 resistors, two fixed caps, and five diodes, four of which are for static protection. Simple but effective... Too much money for what you get though.

I wonder how much better something like a Quantum Pro might be? Deeper nulls I'm sure. I'll have to put that on top of my bithday list. I'll be turning 56 next week.

>Is the tuning capacitor a balanced design (butterfly type) or an
>ordinary frame and rotor type? I am wondering how well they balance
>the tuning capacitor to the case. Or are they just pretending this
>unit has a balanced input?

Y

82. Re: Anybody want to test an antenna for me and the group?

Yahoo group: ferriterodantennaexperimenters
Date: 2006-04-13 02:31:41 UTC
From: John Popelish
Topic: 62 Message: 82

--- In ferriterodantennaexperimenters@yahoogroups.com, "Stumm, John C" <jcstumm@...> wrote:
> John Popelish wrote:

> >Is the tuning capacitor a balanced design (butterfly type) or an
> >ordinary frame and rotor type? I am wondering how well they balance
> >the tuning capacitor to the case. Or are they just pretending this
> >unit has a balanced input?

> It is a dual ordinary frame and rotor type with equal sides.
> They are lashed together to form one large variable that tunes
> the loop plug-in,(sleeve and tip)

So, is the shaft with the tuning knob connected to one side of the antenna? Is the shaft isolated from the box?

> Both of which are across the gates of the fETs.
> The parts count is very low indeed. Three transistors,
> 5 resistors, two fixed caps, and five diodes,
> four of which are for static protection.

If the fets are jfets, they are probably redundant, and only add to the capacitance across the coil.

> Simple but effective... Too much money for what you get though.

Have you ever had an impulse to remove the amp and replace it with something that might be better? Sounds like there is plenty of room in that big box.

> I wonder how much better something like a Quantum Pro might be?
> Deeper nulls I'm sure.

I'd have to see how its made.

> I'll have to put that on top of my bithday list.
> I'll be turning 56 next week.

Happy birthday.

83. RE: [ferriterodantennaexperimenters] Re: Anybody want to test an antenna for me and the group?

Yahoo group: ferriterodantennaexperimenters
Date: 2006-04-13 04:01:43 UTC
From: Stumm, John C
Topic: 62 Message: 83
Attachments: 1 described; binary payloads are missing from this source WARC

>So, is the shaft with the tuning knob connected to one side of the
>antenna? Is the shaft isolated from the box?

It's closed up now but I did look and both shaft and body are isolated.

>Have you ever had an impulse to remove the amp and replace it with
>something that might be better? Sounds like there is plenty of room
>in that big box.

I might have to think about that. I'd probably leave it intact and breadboard something potentally better. Then compare

> I wonder how much better something like a Quantum Pro might be?
> Deeper nulls I'm sure.

>I'd have to see how its made.

It's very well balanced, precision, ultra low noise and hand made.
To rich for my blood i'm afraid.

I'm headed out of town tomorrow. No more testing until Sunday. Tahoe here we come
I may or may not have internet accesability, And a good portable with the Justice Twin Coil will be along. Gotta have something to do while the kids snowboard.

Yahoo! Groups Links

84. RE: [ferriterodantennaexperimenters] Re: Anybody want to test an antenna for me and the group?

Yahoo group: ferriterodantennaexperimenters
Date: 2006-04-19 20:13:02 UTC
From: Stumm, John C
Topic: 62 Message: 84

I have posted a pic of a couple more test loops to test the performance of different size ferrite rods. John's loop is pictured on the top with its rod laid out above it. The blue one below was my first attempt at a similar loop that would accept his rod assembly as well as various smaller ones. It revealed that a smaller rod worked as well as a bigger one. It didn't want to tune much above 1Mhz though. The red worked like a gem. With the rod pictured with it, it tunes pretty much the whole band. I'm thinking that interwinding capacitance is limiting it a little on the top end. The bottom line is that it amplifies signals as well as the larger loops with the larger rods. My next one will employ a slight amount of space between the windings to see if there is some self capacitance that's the limiting factor. I'm using small Styrofoam cups that I cut down and form into my desired funnel shapes.

John

85. Re: Anybody want to test an antenna for me and the group?

Yahoo group: ferriterodantennaexperimenters
Date: 2006-04-21 02:20:44 UTC
From: John Popelish
Topic: 62 Message: 85

--- In ferriterodantennaexperimenters@yahoogroups.com, "Stumm, John C" <jcstumm@...> wrote:
>
> I have posted a pic of a couple more test loops
> to test the performance of different size ferrite rods.
> John's loop is pictured on the top with its rod laid out above it.
> The blue one below was my first attempt at a similar loop
> that would accept his rod assembly as well as various
> smaller ones.
> It revealed that a smaller rod worked as well as a bigger one.

Well, as well as that bigger one, anyway.

> It didn't want to tune much above 1Mhz though.

If you use a pair of such rods, but put a large gap between them, you should be able to reduce the inductance while increasing the Q and raise both the signal output and high frequency range a bit.
My rod has a quite low effective permeability because of the three large and multiple smaller gaps between the sections. So the optimum coils for solid rods will probably have fewer turns than mine does.

> The red worked like a gem. With the rod pictured with it,
> it tunes pretty much the whole band.
> I'm thinking that interwinding capacitance is limiting it
> a little on the top end. The bottom line is that it amplifies
> signals as well as the larger loops with the larger rods.

A nice cost reduction for the same performance. :-)

> My next one will employ a slight amount of space between
> the windings to see if there is some self capacitance
> that's the limiting factor.
> I'm using small Styrofoam cups that I cut down and
> form into my desired funnel shapes.

Without a concept as to what the optimum coil form is, it could take quite a few coil tries to zero in on the optimum form. But the differences in slightly different forms may be too subtle to judge, just by receiving real world signals.

86. please help me construct a turnable ferrite rod

Yahoo group: ferriterodantennaexperimenters
Date: 2006-04-24 21:26:58 UTC
From: Aimo Unto Olavi RUOHO
Topic: 86 Message: 86

Above is my problem: How to find advice to construct a turnable ferriterod antenna.

I think I have the parts, even 2 plastic turntables, if needed,
several ferrite rods, smaller and longer with or without coils for LW
¤ AM (MW) + some wide band antenna (RF)amplifiers.

Where could I find construction drawings, not only schematics?

I have been doing some research work at the Internet, but failed to find any practical/usable advice, just "commercials"!

Would you believe, someone answered to a beginners question: "Just read any electricity book"!!! Too often the questions are answered with similar type of "smart throws". Or worse, no answers at all!

73
ami

87. Re: [ferriterodantennaexperimenters] please help me construct a turnable ferrite rod

Yahoo group: ferriterodantennaexperimenters
Date: 2006-04-25 21:02:03 UTC
From: John Popelish
Topic: 86 Message: 87

Aimo Unto Olavi RUOHO wrote:
> Above is my problem: How to find advice to construct a turnable
> ferriterod antenna.
>
> I think I have the parts, even 2 plastic turntables, if needed,
> several ferrite rods, smaller and longer with or without coils for LW
> ¤ AM (MW) + some wide band antenna (RF)amplifiers.
>
> Where could I find construction drawings, not only schematics?
(snip)

Very specific drawings are hard to find, because the ferrite material can vary very much, depending on manufacturer and type. You will probably need at least a simple inductance meter to find the number of turns that are appropriate for any tuned antenna, that will cover a given band with a given tuning capacitor. If you don't need to tune the antenna, but just amplify it for broad band performance, then you can be quite a bit looser with the rod requirements. You just want the self resonant frequency higher than the highest frequency you want to receive.

I have uploaded a simple balanced antenna preamplifier schematic that is good for something like 50kHz to 20 MHz, (depending mostly on the output transformer) to my misc photo folder. Many core substitutions for the output transformer are possible.

A very fine one can be made by putting two cores (made to go over ribbon cables) together and winding a straight coil through the two slots. An example of such a core would be type 28R0669-000, available from Digikey for $0.31 each.
http://dkc3.digikey.com/PDF/T061/0999.pdf

You can connect the coil from almost any rod antenna to this, if you ground the center of the coil, or add a 1meg resistor to ground at each input.

88. Latest test loop!

Yahoo group: ferriterodantennaexperimenters
Date: 2006-04-26 16:32:28 UTC
From: Stumm, John C
Topic: 88 Message: 88

I have added a photo of my latest test loop. It was wound on my 1" PVC form that accepts various rods, up to my 18" stormwise and John's 2' assembly.
It is comprised of 30 turns, (2X15) of 18 gauge bare copper. The newest feature is the ability to select different taps to vary the tuning range of the Palomar. The full coil range currently tunes down to about 600Khz. The pictured tap settings allow continuous coverage from 1Mhz to 3.5 Mhz. BCB performance is on par with most of the oversized loops I've been testing.
I'm really encouraged with the SW results. It consistently outperformed the stock Palomar loop by 1-2 S units throughout the selected tuning range using the stormwise rod. I intend on tapping down still further while trying smaller and larger rods. Apparently the unused windings aren't affecting performance. They are in the minority right now. It will be interesting to see what happens when their numbers exceed the used windings. It will also be interesting to see what the effective range is. I know loop performance falls off at higher frequencies. We shall see...

John

89. Re:Re: [ferriterodantennaexperimenters] please help me construct a turnable ferrite rod

Yahoo group: ferriterodantennaexperimenters
Date: 2006-04-26 00:02:20 UTC
From: aimo ruoho
Topic: 86 Message: 89

Thank you very much indeed,John, for your prompt and nice answer. I have been admiring your mails for a few months.

Unfortunately I only receive a white screen from the address, you sent to me. Perhaps I only can't continue in the right way. It only gives a word "valmis" on the left lower corner (meaning: "ready" in Finnish?).
Ami

John Popelish <jpopelish@...> wrote: Aimo Unto Olavi RUOHO wrote:
> Above is my problem: How to find advice to construct a turnable
> ferriterod antenna.
>
> I think I have the parts, even 2 plastic turntables, if needed,
> several ferrite rods, smaller and longer with or without coils for LW
> ? AM (MW) + some wide band antenna (RF)amplifiers.
>
> Where could I find construction drawings, not only schematics?
(snip)

Very specific drawings are hard to find, because the ferrite material can vary very much, depending on manufacturer and type. You will probably need at least a simple inductance meter to find the number of turns that are appropriate for any tuned antenna, that will cover a given band with a given tuning capacitor. If you don't need to tune the antenna, but just amplify it for broad band performance, then you can be quite a bit looser with the rod requirements. You just want the self resonant frequency higher than the highest frequency you want to receive.

I have uploaded a simple balanced antenna preamplifier schematic that is good for something like 50kHz to 20 MHz, (depending mostly on the output transformer) to my misc photo folder. Many core substitutions for the output transformer are possible.

A very fine one can be made by putting two cores (made to go over ribbon cables) together and winding a straight coil through the two slots. An example of such a core would be type 28R0669-000, available from Digikey for $0.31 each.
http://dkc3.digikey.com/PDF/T061/0999.pdf

You can connect the coil from almost any rod antenna to this, if you ground the center of the coil, or add a 1meg resistor to ground at each input.

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90. Re:Re: [ferriterodantennaexperimenters] please help me construct a turnable ferr

Yahoo group: ferriterodantennaexperimenters
Date: 2006-05-03 16:08:54 UTC
From: John Popelish
Topic: 86 Message: 90

--- In ferriterodantennaexperimenters@yahoogroups.com, aimo ruoho
<aimounto@...> wrote:
(snip)
> Unfortunately I only receive a white screen from the address, you
sent to me. Perhaps I only can't continue in the right way. It only
gives a word "valmis" on the left lower corner (meaning: "ready" in
Finnish?).
> Ami

The link works for me. It is a PDF file (you need a PFD viewer
plug-in added to your browser) showing a page out of the Digikey
catalog that lists all the flat cable RFI suppression cores (flattened
toroids that fit over ribbon cables). I expect an order to arrive,
later today, that has some examples of this type of core that I will
use to build test preamp output transformers and complete preamps. I
will post pictures and any test data I can produce, later.

Here is another example (non PDF) that shows the general form:
http://www.bgmicro.com/prodinfo.asp?sid=04041087962962966624966233&prodid=COL1018&page=1&c
ri=COL&stype=2

> John Popelish <jpopelish@...> wrote: (snip)
>> A very fine one can be made by putting two cores (made to go over
>> ribbon cables) together and winding a straight coil through
>> the two slots.
>> An example of such a core would be type 28R0669-000, available
>> from Digikey for $0.31 each.
>> http://dkc3.digikey.com/PDF/T061/0999.pdf

91. Portable amplified loop

Yahoo group: ferriterodantennaexperimenters
Date: 2006-05-03 20:19:11 UTC
From: Stumm, John C
Topic: 91 Message: 91

I've added a pic of my newest creation. It is comprised of a Degen DE31 amplified shortwave loop modified to accept a small ferrite loop for the BCB. As usual, preliminary results are promising. I just performed a quick test here at work and it seems to work well. Further testing in warranted based on what I've seen so far. As a side note, one of my findings from the ten or so loops I've constructed, is that the bigger loops only provide incremental improvements in sensitivity. The small ones I've been concentrating on lately work very adequately for what is practical. Portability, practicality and economics are what I want to proceed with, starting with the Degen. It cost me all of $15.00!

John

---

92. Re: [ferriterodantennaexperimenters] Portable amplified loop

Yahoo group: ferriterodantennaexperimenters
Date: 2006-05-03 20:49:55 UTC
From: Paul Birke
Topic: 91 Message: 92

Dear John

you seem to see no advantage to having a space between
the winding turns to reduce induced losses

have you tried previously arrangments at say 10 MHz
that show direct abutment of the insulated oonductors
to be of value as opposed to a spacer of at least one
wire diameter

perhaps you are using the antenna at lower frequencies
around 2 MHz wherein this may not matter

thanks

Paul

--- "Stumm, John C" <jcstumm@...> wrote:

> I've added a pic of my newest creation. It is
> comprised of a Degen DE31
> amplified shortwave loop modified to accept a small
> ferrite loop for the
> BCB. As usual, preliminary results are promising. I
> just performed a
> quick test here at work and it seems to work well.
> Further testing in
> warranted based on what I've seen so far. As a side
> note, one of my
> findings from the ten or so loops I've constructed,
> is that the bigger
> loops only provide incremental improvements in
> sensitivity. The small
> ones I've been concentrating on lately work very
> adequately for what is
> practical. Portability, practicality and economics
> are what I want to
> proceed with, starting with the Degen. It cost me
> all of $15.00!
>
>
>
> John
>
>
>
> _____

>
>

93. flat bifilar transformers

Yahoo group: ferriterodantennaexperimenters
Date: 2006-05-04 03:00:30 UTC
From: John Popelish
Topic: 93 Message: 93

I have constructted 3 flat bifilar transforemrs to use as 4:1 output transformers for balanced preamps. (photo in my misc folder)

Each is made with a pair of flat RFI filter cores made to fit over ribbon cable, glued together. The Steward type 28 material is somewhat similar to Fair-Rite type 43.

The smallest uses Steward 28R0453-200, with an 8 mm wide slot. 8 turns of 30 AWG, bifilar, silver plated wire wrap wire (with Kynar insulation) filled the slot.

The inductance of one winding, at 840 kHz is 52.8 uHy.
The two windings in series, at 405 kHz, have an inductance of 226 uHy.
The inductance of one winding with the other shorted, at 11.1 MHz, is .3 uHy.
The capacitance between the windings is 31 pF.

The middle sized one is made with two Steward 28R0616-000, with a 13.5 mm wide slot. It held 14 turns, bifilar, of the same wire.

The inductance of one winding, at 685 kHz is 79.4 uHy.
The two windings in series, at 334 kHz, have an inductance of 335 uHy.
The inductance of one winding with the other shorted, at 9.94 MHz, is .38 uHy.
The capacitance between the windings is 42 pF.

The largest one is made with two Steward 28R1102-100, with a 23 mm wide slot. It held 23 turns, bifilar, of the same wire.

The inductance of one winding, at 253 kHz is 582 uHy.
The two windings in series, at 119 kHz, have an inductance of 2610 uHy.
The inductance of one winding with the other shorted, at 5.65 MHz, is 1.17 uHy.
The capacitance between the windings is 154 pF.

Calculating where the two seriesed windings have an inductive impedance of 200 ohms predicts a reasonable lower end of the operating frequency range (where the input impedance will fall from 200 ohms to about 141 ohms), and where half the total winding capacitance has a capacitive impedance of 50 ohms predicts a reasonable upper end of the operating frequenct range. This assumes that the leakage inductance and transmission line coupling are not the limiting factors at the top end.

The results of these calculations are:
Small: 102 MHz to 140 kHz, 728:1
Medium: 76.7 MHz to 95.1 kHz, 806:1

Large: 41.4 MHz to 12.2 kHz, 3,390:1

Apparently, transformers made with larger cores have a wider frequency operating range.

94. RE: [ferriterodantennaexperimenters] Portable amplified loop

Yahoo group: ferriterodantennaexperimenters
Date: 2006-05-04 03:04:01 UTC
From: Stumm, John C
Topic: 91 Message: 94
Attachments: 1 described; binary payloads are missing from this source WARC

Paul,
At the frequencies I've been experimenting with, (<3.5Mhz), the spacing of the winding on the "close" wound loops doesn't seem to be an issue. As I am using vinyl insulated #20 solid, there is a measured amount of winding space that keeps the self resonant point high enough. I think that the small coil size of ferrite loops limits the amount of winding to winding area thus resulting in not as much distributed capacitance, (compared to air core loops). Then again, you may be refering to a different phenomenon. Is this the case?
Regards,
John

>Dear John

>you seem to see no advantage to having a space between
>the winding turns to reduce induced losses

>have you tried previously arrangments at say 10 MHz
>that show direct abutment of the insulated oonductors
>to be of value as opposed to a spacer of at least one
>wire diameter

>perhaps you are using the antenna at lower frequencies
>around 2 MHz wherein this may not matter

>thanks

Paul

--- "Stumm, John C" <jcstumm@...> wrote:

> I've added a pic of my newest creation. It is
> comprised of a Degen DE31
> amplified shortwave loop modified to accept a small
> ferrite loop for the
> BCB. As usual, preliminary results are promising. I
> just performed a
> quick test here at work and it seems to work well.
> Further testing in
> warranted based on what I've seen so far. As a side
> note, one of my
> findings from the ten or so loops I've constructed,
> is that the bigger
> loops only provide incremental improvements in
> sensitivity. The small
> ones I've been concentrating on lately work very
> adequately for what is
> practical. Portability, practicality and economics

> are what I want to
> proceed with, starting with the Degen. It cost me
> all of $15.00!
>
>
>
> John
>
>
>
> _____
>
>

Yahoo! Groups Links

95. Re: Portable amplified loop

Yahoo group: ferriterodantennaexperimenters
Date: 2006-05-04 03:55:21 UTC
From: John Popelish
Topic: 91 Message: 95

--- In ferriterodantennaexperimenters@yahoogroups.com, "Stumm, John C" <jcstumm@...> wrote:
>
> I've added a pic of my newest creation. It is comprised of a Degen DE31
> amplified shortwave loop modified to accept a small ferrite loop for the
> BCB.
(snip)

It looks like the preamp is a foot or so away from the loop. Is there some reason why it is not right up against the coil, to minimize the stray capacitance before the signal is amplified?

96. RE: [ferriterodantennaexperimenters] Re: Portable amplified loop

Yahoo group: ferriterodantennaexperimenters
Date: 2006-05-04 06:14:35 UTC
From: Stumm, John C
Topic: 91 Message: 96
Attachments: 1 described; binary payloads are missing from this source WARC

>It looks like the preamp is a foot or so away from the loop. Is there
>some reason why it is not right up against the coil, to minimize the
>stray capacitance before the signal is amplified?

It was a preliminary test to see if the two, (loop amd preamp) were compatable. The test confirmed they are. Further testing conducted tonight revealed that the performance rivals that of the Palomar. I will post the preamp/power supply circuit tomorrow.

Y

97. RE: [ferriterodantennaexperimenters] Portable amplified loop

Yahoo group: ferriterodantennaexperimenters
Date: 2006-05-04 03:26:07 UTC
From: Paul Birke
Topic: 91 Message: 97

--- "Stumm, John C" <jcstumm@...> wrote:

Paul,
At the frequencies I've been experimenting with,
(<3.5Mhz), the spacing of the winding on the "close"
wound loops doesn't seem to be an issue. As I am using
vinyl insulated #20 solid, there is a measured amount
of winding space that keeps the self resonant point
high enough.

yes that is the key point

I think that the small coil size of ferrite loops
limits the amount of winding to winding area thus
resulting in not as much distributed capacitance,
(compared to air core loops). Then again, you may be
refering to a different phenomenon. Is this the case?

losses induced in the iron and or the copper conductor
caused by the presence of "too much" turn to turn
capacitance.

another effect here would be to have too much cap to
ground.

all the best

Paul

maybe other have some ready made rules of thumb

98. RE: [ferriterodantennaexperimenters] Portable amplified loop

Yahoo group: ferriterodantennaexperimenters
Date: 2006-05-04 03:37:12 UTC
From: Paul Birke
Topic: 91 Message: 98

--- "Stumm, John C" <jcstumm@...> wrote:

Paul,
At the frequencies I've been experimenting with,
(<3.5Mhz), the spacing of the winding on the "close"
wound loops doesn't seem to be an issue. As I am using
vinyl insulated #20 solid, there is a measured amount
of winding space that keeps the self resonant point
high enough. I think that the small coil size of
ferrite loops limits the amount of winding to winding
area thus resulting in not as much distributed
capacitance, (compared to air core loops). Then again,
you may be refering to a different phenomenon.
****

J
the effect of too much turn to turn cap may also come
out is a noticeable shift downwards of the Q (if you
look at that BBC white paper on hv ferrite antennae
they had some funny things with Q on one of the
models, maybe turn to turn can turn on in the higher
frequencise, just a guess, I just re read the paper
again tonight.
P

any curves of Q versus turn to turn spacing around?

and again the inter connectitivity is such that extra
losses could show up or result in lessened Q I
suppose.

P

99. Re: Latest test loop!

Yahoo group: ferriterodantennaexperimenters
Date: 2006-05-04 21:37:49 UTC
From: Aimo Unto Olavi RUOHO
Topic: 88 Message: 99

Well, O.K., sorry, now I found your test loop for 80/160 kHz.
It would be nice to know more details. THNX anyway. You may be too
busy to answer, but it is all right!
Best Regards from Spain. Hasta luego, amigo!

--- In ferriterodantennaexperimenters@yahoogroups.com, "Stumm, John
C" <jcstumm@...> wrote:
>
> I have added a photo of my latest test loop. It was wound on my 1"
PVC
> form that accepts various rods, up to my 18" stormwise and John's
2'
> assembly.
> It is comprised of 30 turns, (2X15) of 18 gauge bare copper. The
newest
> feature is the ability to select different taps to vary the tuning
range
> of the Palomar. The full coil range currently tunes down to about
> 600Khz. The pictured tap settings allow continuous coverage from
1Mhz to
> 3.5 Mhz. BCB performance is on par with most of the oversized
loops I've
> been testing.
> I'm really encouraged with the SW results. It consistently
outperformed
> the stock Palomar loop by 1-2 S units throughout the selected
tuning
> range using the stormwise rod. I intend on tapping down still
further
> while trying smaller and larger rods. Apparently the unused
windings
> aren't affecting performance. They are in the minority right now.
It
> will be interesting to see what happens when their numbers exceed
the
> used windings. It will also be interesting to see what the
effective
> range is. I know loop performance falls off at higher frequencies.
We
> shall see...
>
> John
>

100. Re: Latest test loop!

Yahoo group: ferriterodantennaexperimenters
Date: 2006-05-04 21:29:25 UTC
From: Aimo Unto Olavi RUOHO
Topic: 88 Message: 100

Hi!

I have been looking for your photo, but have not found it yet. If you meant it to bee seen by others than John Popelish, I am very much interested to see it.

ami

--- In ferriterodantennaexperimenters@yahoogroups.com, "Stumm, John C" <jcstumm@...> wrote:
>
> I have added a photo of my latest test loop. It was wound on my 1" PVC
> form that accepts various rods, up to my 18" stormwise and John's 2'
> assembly.
> It is comprised of 30 turns, (2X15) of 18 gauge bare copper. The newest
> feature is the ability to select different taps to vary the tuning range
> of the Palomar. The full coil range currently tunes down to about
> 600Khz. The pictured tap settings allow continuous coverage from 1Mhz to
> 3.5 Mhz. BCB performance is on par with most of the oversized loops I've
> been testing.
> I'm really encouraged with the SW results. It consistently outperformed
> the stock Palomar loop by 1-2 S units throughout the selected tuning
> range using the stormwise rod. I intend on tapping down still further
> while trying smaller and larger rods. Apparently the unused windings
> aren't affecting performance. They are in the minority right now. It
> will be interesting to see what happens when their numbers exceed the
> used windings. It will also be interesting to see what the effective
> range is. I know loop performance falls off at higher frequencies. We
> shall see...
>
> John
>

101. Re: [ferriterodantennaexperimenters] Portable amplified loop

Yahoo group: ferriterodantennaexperimenters
Date: 2006-05-04 21:44:47 UTC
From: aimo ruoho
Topic: 91 Message: 101

Hi!
BBC white paper on hv ferrite antennae?
Would you bother telling me, how to get it? THNX!
ami

J
(if you
look at that BBC white paper on hv ferrite antennae

102. Re: [ferriterodantennaexperimenters] Portable amplified loop

Yahoo group: ferriterodantennaexperimenters
Date: 2006-05-07 17:15:45 UTC
From: Paul Birke
Topic: 91 Message: 102
Attachments: 2 described; binary payloads are missing from this source WARC

```
[ Attachment content not displayed ]
```

103. Balanced Preamp 2

Yahoo group: ferriterodantennaexperimenters
Date: 2006-05-07 21:06:51 UTC
From: John Popelish
Topic: 103 Message: 103

I just finished assembling a balanced rod preamp (BalPre2) and posted to my misc folder, a schematic and assembly photo. I haven't yet connected the rod antenna, or any tuning capacitance (though the board has roon for a varactor set). It is superior to the earlier schematic I posted, in that it handles device mismatch much better (among other things). I will soom take the first one down.

The output transformer is the smallest of the flat core transmission line units I mentioned, earlier (about 1/2 " square by 3/16" thick). Now, I have to come up with a test of its bandwidth. I am hoping for something like .5 MHz to 50 MHz. I welcome any suggestions toward this end, but have limited test equipment (scope, signal generator, RF volt meter).

The design goal of this unit was the highest possible input impedance, for minimum tuned input loading (maximum Q).

Comments and criticism welcome.

104. Degen DE31 active loop amp info

Yahoo group: ferriterodantennaexperimenters
Date: 2006-05-07 21:32:09 UTC
From: Stumm, John C
Topic: 104 Message: 104
Attachments: 1 described; binary payloads are missing from this source WARC

I have performed further test on the Degen DE31 coupled to my smallest ferrite loop. Sensitivity is almost the same as the Palomar although the noise rejection isn't as good. The reason is more than likely that were dealing with a single ended input vs the balanced input the Palomar affords.

Here is an update of the Degen loop amplifier schematic. (courtesy of the DRM software radio forum)

The transistor is a 2SK544 MOSFET (Idss group E) with y21 = 11 mS, Idss = 2.5 to 6 mA, very low Crss, get its datasheet here.

The tuning diode is a 1S149 or 1SV149 (equivalent) AM tuning diode, get its datasheet here.

Latest Update: Latest measurements made by our forum member Funkerberg (thanks!), indicate that L1 = 10 uH and C2 = 10 nF which yields a low-Q series resonant circuit for mediumwave at the drain of the FET, more or less shortening mediumwave signals to ground.
C1 = 10 nF, it acts as an RF short.

Assuming a lossless RF decoupling circuit in the battery box, the RF voltage gain for shortwave signals with a receiver load of 500 Ohms is about 0.9, it falls to about 0.36 if a receiver with an input impedance of 50 Ohms is connected. However, more signal power is transferred in case of the 50 Ohm receiver since the impedance mismatch is smaller.
If maximum sensitivity is desired on a receiver with a 50 Ohm input, a 2:1 impedance transformer could be used to transform the loop amplifier's output impedance (100 Ohms, established by R1) to the receiver's input impedance.
Similarily, a 1:4 impedance transformer could be used to transform the loop amplifier's output impedance to a high impedance receiver input in case maximum sensitivity is desired.
Link to Schematic:
http://www.drmrx.org/forum/attachment.php?attachmentid=15616&d=1130372787

John

105. Re: Balanced Preamp 2

Yahoo group: ferriterodantennaexperimenters
Date: 2006-05-09 02:19:28 UTC
From: John Popelish
Topic: 103 Message: 105

--- In ferriterodantennaexperimenters@yahoogroups.com, "John Popelish" <jpopelish@...> wrote:

I spent about 6 hours, today, trying to build a spice model of the bifilar transmission line transformer I put into balanced Preamp 2.

The model is built of 8 pairs of inductors, representing the 8 turns of paired wire in the transformer. I set the mutual inductance of adjacent turns at .95, turns separated by a turn at .95^2, turns separated by two turns at .95^3, etc.

I set each capacitor (that represents the net capacitance between each turn of wire and the wire on each side of it) equal to 1/17th of the measured interwinding capacitance.

Then I found the individual turn inductance that produced the measured winding inductance at the measured frequency.

At trhat point, I connected the model to a pair of voltage sources with 100 ohm impedances, to represent the followers driving the output transformer. A photo of the frequency responce produced by this model is in my misc folder. Not bad for a first attempt.

Now the harder part... verifying the actual frequency response to validate the modelling method.

106. Re: Balanced Preamp 2

Yahoo group: ferriterodantennaexperimenters
Date: 2006-05-09 19:41:41 UTC
From: John Popelish
Topic: 103 Message: 106

--- In ferriterodantennaexperimenters@yahoogroups.com, "John Popelish" <jpopelish@...> wrote:
>
> --- In ferriterodantennaexperimenters@...m, "John Popelish"
> <jpopelish@> wrote:
(snip)
> The model is built of 8 pairs of inductors, representing the 8 turns
> of paired wire in the transformer. I set the mutual inductance of
> adjacent turns at .95, turns separated by a turn at .95^2, turns
> separated by two turns at .95^3, etc.
(snip)

I tweaked the mopdel to hit both the [one winding inductance, other winding open] and [one winding inductance, withn other winding shorted] by tweaking the section inductance and mutual inductance. Corrected frequency response posted in place of the original. Looks like the high frequency end may be even better, perhaps limited by the length of the wire (about 8 inches per winding), rather than by the leakage inductance. My model doesn't take the frequency roll off of the ferrite core permeability above 2 MHz into account, so I'm not sure about that.

107. Help a newbie?

Yahoo group: ferriterodantennaexperimenters
Date: 2006-05-27 16:53:37 UTC
From: dharmaBum
Topic: 107 Message: 107

Greetings to my fellow ferrite rod antenna enhusiasts...

I work for an oceanographic research organization. We're working with some lads in Australia who are measuring the effect of climate change on coral reefs.

Our challenge is to deliver data to the surface (25 meters at most) over a vertical path. A hundred bits per second will be sufficient to telemeter the necessary data. Acoustic modems work poorly near the surface due to surf noise and the huge reflection at the water/air boundary.

I want to explore VLF modems for communicating this data. I'm very knowledgeable about RF modems (after the antenna) and DSP but I'm totally ignorant about antennas.

Ferrite rod antennas seem like a good thing to investigate.

Any comments on where to start?

Thanks in advance for your comments and suggestions...
Wayne

108. Re: Help a newbie?

Yahoo group: ferriterodantennaexperimenters
Date: 2006-06-01 18:24:12 UTC
From: John Popelish
Topic: 107 Message: 108

--- In ferriterodantennaexperimenters@yahoogroups.com, "dharmaBum" <dharmabum@...> wrote:
(snip)
> Our challenge is to deliver data to the surface (25 meters at most)
> over a vertical path. A hundred bits per second will be sufficient
> to telemeter the necessary data. Acoustic modems work poorly near
> the surface due to surf noise and the huge reflection at the
> water/air boundary.
>
> I want to explore VLF modems for communicating this data. I'm very
> knowledgeable about RF modems (after the antenna) and DSP but I'm
> totally ignorant about antennas.
>
> Ferrite rod antennas seem like a good thing to investigate.
(snip)

Are you intending to hover directly above the sunken transmitter while receiving the data? Is a buoy out of the question?

Anyway, rod antennas amy be usable for both transmission and reception, if they are large enough. Either the transmitting or receiving antenna would probably have to be made up of two rods, crossed at right angles, with the signal (from/to) phase shifted by 90 degrees, to circularly polarizeeither the transmit or receive polarization. Otherwise, you not only have to be directly above the transmitter, you have to orient the rod correctly. This assumes that you use the rods in a horizontal position. You might orient them vertically, to eliminate the orientation sensitivity, but I think the field falls off faster with distance, this way.

Do you have a carrier frequency in mind for this application? If you use something near 40 kHz, you might be able to apply ordinary (IR) remote control chips for the transmitter and receiver encoding and decoding functions.

Do you have a size limit for the antennas?

109. Re: [ferriterodantennaexperimenters] Help a newbie?

Yahoo group: ferriterodantennaexperimenters
Date: 2006-06-01 16:05:25 UTC
From: Russell Shaw
Topic: 107 Message: 109

dharmaBum wrote:
> Greetings to my fellow ferrite rod antenna enhusiasts...
>
> I work for an oceanographic research organization. We're working
> with some lads in Australia who are measuring the effect of climate
> change on coral reefs.
>
> Our challenge is to deliver data to the surface (25 meters at most)
> over a vertical path. A hundred bits per second will be sufficient
> to telemeter the necessary data. Acoustic modems work poorly near
> the surface due to surf noise and the huge reflection at the
> water/air boundary.
>
> I want to explore VLF modems for communicating this data. I'm very
> knowledgeable about RF modems (after the antenna) and DSP but I'm
> totally ignorant about antennas.
>
> Ferrite rod antennas seem like a good thing to investigate.
>
> Any comments on where to start?
>
> Thanks in advance for your comments and suggestions...
> Wayne

Big multi-turn loop antennae are best. Use as big as you can, like
1m to 10m diameter (depends on how much power you're transmitting).
If the transmitter needs a small size, try a multi-turn 10cm-50cm
loop, or a ferrite rod antenna.

If you use a narrowband carrier in the 10-100kHz range, you should
get excellent accoustic modem performance without surf noise problems.
Baseband modems have all the noise problems.

110. hello from new member

Yahoo group: ferriterodantennaexperimenters
Date: 2006-06-02 00:49:45 UTC
From: Larry
Topic: 110 Message: 110

Just got into the group and hope to learn some new stuff. Mostly into shortwave and ham dxing but willing to learn new stuff.

Larry Fields,n6hpx/du1

111. Re: Help a newbie?

Yahoo group: ferriterodantennaexperimenters
Date: 2006-06-02 14:58:24 UTC
From: Steve
Topic: 107 Message: 111

--- In ferriterodantennaexperimenters@yahoogroups.com, Russell Shaw
<rjshaw@...> wrote:
>
> dharmaBum wrote:
> > Greetings to my fellow ferrite rod antenna enhusiasts...
> >
> > I work for an oceanographic research organization. We're working
> > with some lads in Australia who are measuring the effect of climate
> > change on coral reefs.
> >
> > Our challenge is to deliver data to the surface (25 meters at most)
> > over a vertical path. A hundred bits per second will be sufficient
> > to telemeter the necessary data. Acoustic modems work poorly near
> > the surface due to surf noise and the huge reflection at the
> > water/air boundary.
> >
> > I want to explore VLF modems for communicating this data. I'm very
> > knowledgeable about RF modems (after the antenna) and DSP but I'm
> > totally ignorant about antennas.
> >
> > Ferrite rod antennas seem like a good thing to investigate.
> >
> > Any comments on where to start?
> >
> > Thanks in advance for your comments and suggestions...
> > Wayne
>
> Big multi-turn loop antennae are best. Use as big as you can, like
> 1m to 10m diameter (depends on how much power you're transmitting).
> If the transmitter needs a small size, try a multi-turn 10cm-50cm
> loop, or a ferrite rod antenna.

Loop antennas don't make very efficient transmitting antennas, I'm
also thinking size is going to be important.

And you might also ask on the loopantennas list.

http://groups.yahoo.com/group/loopantenna

Regarding using IR, doesn't water absorb IR pretty well?

Steve Greenfield

112. Re: [ferriterodantennaexperimenters] Re: Help a newbie?

Yahoo group: ferriterodantennaexperimenters
Date: 2006-06-06 02:16:10 UTC
From: Russell Shaw
Topic: 107 Message: 112

Steve wrote:
> --- In ferriterodantennaexperimenters@yahoogroups.com, Russell Shaw
> <rjshaw@...> wrote:
>
>>dharmaBum wrote:
>>
>>>Greetings to my fellow ferrite rod antenna enhusiasts...
>>>
>>>I work for an oceanographic research organization. We're working
>>>with some lads in Australia who are measuring the effect of climate
>>>change on coral reefs.
>>>
>>>Our challenge is to deliver data to the surface (25 meters at most)
>>>over a vertical path. A hundred bits per second will be sufficient
>>>to telemeter the necessary data. Acoustic modems work poorly near
>>>the surface due to surf noise and the huge reflection at the
>>>water/air boundary.
>>>
>>>I want to explore VLF modems for communicating this data. I'm very
>>>knowledgeable about RF modems (after the antenna) and DSP but I'm
>>>totally ignorant about antennas.
>>>
>>>Ferrite rod antennas seem like a good thing to investigate.
>>>
>>>Any comments on where to start?
>>>
>>>Thanks in advance for your comments and suggestions...
>>>Wayne
>>
>>Big multi-turn loop antennae are best. Use as big as you can, like
>>1m to 10m diameter (depends on how much power you're transmitting).
>>If the transmitter needs a small size, try a multi-turn 10cm-50cm
>>loop, or a ferrite rod antenna.
>
> Loop antennas don't make very efficient transmitting antennas, I'm
> also thinking size is going to be important.

I was thinking of near-field induction rather than far-field radiation.
Loops are perfectly adequate for near-field induction.

> And you might also ask on the loopantennas list.
>
> http://groups.yahoo.com/group/loopantenna
>
> Regarding using IR, doesn't water absorb IR pretty well?

>

113. Re: Balanced Preamp 2

Yahoo group: ferriterodantennaexperimenters
Date: 2006-06-08 02:31:00 UTC
From: John Popelish
Topic: 103 Message: 113

I am getting a good lesson on the difference between simulating a circuit and building it. After Paul Birke built one of these preamps, and reported strong evidence of oscillations, via email, I finally got around to taking a close look at the one I built. It is such a good oscillator that I am having trouble crippling it enough, by any means, short, of removing power, to get it under control.

For instance, I removed the rod antenna an tuning capacitor, and shorted the two inputs to ground with 3 inch jumpers. Still oscillated.

I moved the bottom end of the source resistors, from the bootstrap position on the output transformer, to ground. Still oscillated.

I shorted the output transformer to ground on each end, with .1 inch jumpers. still oscillated.

I removed the emitter capacitors. Still oscillated.

I jumpred the two inputs to ground with .1 inch jumpers. Oscillations ceased, or at least looked quiet on my 100 MHz scope. They might still be oscillating at 500MHz.

Damn. Those MPSH10 NPN transistors have such high frequency gain that every bit of trace looks like a significant inductor. I'll play around with some more variations, and see if I can get something close to the original working, but I may have to rethink the whole approach or build a purpose made circuit board, rather than use prototype board.

So if you haven't built one of these, I advise holding off till I get it under control, unless you want to have the same kind of fun I am having.

114. Big, low frequency rod material

Yahoo group: ferriterodantennaexperimenters
Date: 2006-07-17 22:25:31 UTC
From: John Popelish
Topic: 114 Message: 114

I finally got some large (25.5 mm diameter by 28.8 mm long) 5000 permeability beads from Digikey, and they dropped the price when they got them in stock. The part Steward part number is LFB259128-000, and the Digikey part number is 240-2138-ND. I have had these back ordered and cancelled for 6 months, but they now show over 7000 in stock af $1.78 each, so you can get 15 of them to exceed the minimum $25 order to make a 1+ inch diameter by 17 inch long rod for about $32. This 5000 u material is best for below 100 kHz (permeability peaks at about 1 MHz, but the losses get pertty high), especially broad band (untuned) antennas.

115. Re: [ferriterodantennaexperimenters] Big, low frequency rod material

Yahoo group: ferriterodantennaexperimenters
Date: 2006-07-18 01:46:19 UTC
From: nonlinear@rogers.com
Topic: 114 Message: 115

Dear John

thanks so much for posting this,

all the best

Paul

----- Original Message ----
From: John Popelish <jpopelish@...>
To: ferriterodantennaexperimenters@yahoogroups.com
Sent: Monday, July 17, 2006 6:25:31 PM
Subject: [ferriterodantennaexperimenters] Big, low frequency rod material

I finally got some large (25.5 mm diameter by 28.8 mm long) 5000
permeability beads from Digikey, and they dropped the price when they
got them in stock. The part Steward part number is LFB259128-000, and
the Digikey part number is 240-2138-ND. I have had these back ordered
and cancelled for 6 months, but they now show over 7000 in stock af
$1.78 each, so you can get 15 of them to exceed the minimum $25 order
to make a 1+ inch diameter by 17 inch long rod for about $32. This
5000 u material is best for below 100 kHz (permeability peaks at about
1 MHz, but the losses get pertty high), especially broad band
(untuned) antennas.

116. Re: [ferriterodantennaexperimenters] Big, low frequency rod material

Yahoo group: ferriterodantennaexperimenters
Date: 2006-07-18 01:57:33 UTC
From: nonlinear@rogers.com
Topic: 114 Message: 116

http://rocky.digikey.com/WebLib/Steward/Web%20Data/LFB259128-000.pdf

shows what John is talking about here

****

Dear John

John this should be ok up to at least 5 MHz, yes ? no? for a shortwave ferrite rod gapped?

all the best

Paul

117. Re: [ferriterodantennaexperimenters] Big, low frequency rod material

Yahoo group: ferriterodantennaexperimenters
Date: 2006-07-18 02:50:45 UTC
From: John Popelish
Topic: 114 Message: 117

nonlinear@... wrote:
> http://rocky.digikey.com/WebLib/Steward/Web%20Data/LFB259128-000.pdf
>
>
> shows what John is talking about here
>
> **********
>
> Dear John
>
> John this should be ok up to at least 5 MHz, yes ? no? for a shortwave ferrite rod gapped?

It becomes very lossy above 1 MHz, even though it still has some permeability. I would go with the type 28 between .5 MHz and 2 MHz, and the HF material above that.

The toroid PDF available at:
http://www.steward.com/web_prod_fam800X600.asp?Line=Toroids&ScrSize=900
Shows the properties of the LF material as type 35, and the HF material as type 25. Page 7 shows the basic relative impedance of a turn on these three materials. When they sell it as shield beads, they change type 35 to LF and type 25 to HF, but retain the name type 28, for some reason.

118. ferrite antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2006-10-18 01:46:22 UTC
From: tim
Topic: 118 Message: 118

does anyone have any ideas on how many turns one would need to make a ferrite antenna for the following frequency ranges 100-500KHz &500-1700KHz? i have a pair of ferrite sticks 7.5" long & .5" diameter. i am wanting to make these for a kenwood general receiver. any help would be appreciated.
thanks

119. Re: [ferriterodantennaexperimenters] ferrite antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2006-10-18 15:25:36 UTC
From: John Popelish
Topic: 118 Message: 119

tim wrote:
> does anyone have any ideas on how many turns one would need to make a
> ferrite antenna for the following frequency ranges 100-500KHz
> &500-1700KHz? i have a pair of ferrite sticks 7.5" long & .5" diameter.
> i am wanting to make these for a kenwood general receiver.
(snip)

I am assuming (unless you correct me) that you want to make
two antennas, one with each rod.

What material are the rods made of?

Do you have a tuning capacitor to use with these antennas?

Does the receiver have antenna terminals for the antenna?

Have you looked over this guide to the generalities of rod
antennas?
http://www.amidoncorp.com/aai_ferriterods.htm

120. Looking for Longwave Coils for ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2006-12-17 02:17:31 UTC
From: Adam E.
Topic: 120 Message: 120

Hello,

I need to know where I can find or how to make a longwave coil for a ferrite rod that 4.5 inches. How many turns or how is it made? Also where can I order prewound LW coils? Everytime I go online I keep on finding MW coils most of the time but no Long wave coils that cover 144 to 519 kHz on google.

I would appreciate it and Happy Holidays,

Adam E.

121. Re: Looking for Longwave Coils for ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2006-12-17 04:55:41 UTC
From: John Popelish
Topic: 120 Message: 121

--- In ferriterodantennaexperimenters@yahoogroups.com, "Adam E." <gccengineering@...> wrote:
>
>
> Hello,
>
> I need to know where I can find or how to make a longwave
> coil for a ferrite rod that 4.5 inches. How many turns
> or how is it made? Also where can I order prewound
> LW coils? Everytime I go online I keep on finding MW
> coils most of the time but no Long wave coils that cover
> 144 to 519 kHz on google.

The lower the frequency, the less critical the design becomes, since skin effect and ferrite losses go down. Have you read through the test results I presented in the PDF files in my files folder? They will give you some idea what worked well in that frequency range. But a real design would include your requirements for tuning and Q (if you intend to tune the antenna) and the receiver impedance, as well as whether you want a balanced or single ended output.

Do you have a way to test the resonant frequency or inductance of any trial?

122. Re: [ferriterodantennaexperimenters] Looking for Longwave Coils for ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2006-12-22 21:38:40 UTC
From: otc_friend
Topic: 120 Message: 122

I worked out 77.5kHz, 585kHz and 1548kHz - all on the same 8mm x 50mm rod.
The number of turns depends on the input resistance of the receiver or for a transmitter mainly on the power output needed. For more power you need a thicker wire.
Start with approx. 100 turns at 100kHz. It is not really important. You must always resonate it with a cap.
You can tap the coil.

regards -
Henry

--
www.ehydra.dyndns.info

----- Original Message -----
From: Adam E.
To: ferriterodantennaexperimenters@yahoogroups.com
Sent: Sunday, December 17, 2006 3:17 AM
Subject: [ferriterodantennaexperimenters] Looking for Longwave Coils for ferrite rods

Hello,

I need to know where I can find or how to make a longwave coil for a ferrite rod that 4.5 inches. How many turns or how is it made? Also where can I order prewound LW coils? Everytime I go online I keep on finding MW coils most of the time but no Long wave coils that cover 144 to 519 kHz on google.

I would appreciate it and Happy Holidays,

Adam E.

123. First message, a hello and a project from Brazil

Yahoo group: ferriterodantennaexperimenters
Date: 2007-01-31 14:53:42 UTC
From: huelbeag
Topic: 123 Message: 123

Dear friends,

Just to say hello from Brazil :)

Our DX Club of Brazil has a very intersting (I think so) ferrite antenna. I added it to the link area of this groups. Here is the description:

"RGP3 - An compact, passive MW antenna made with ten ferrite rods"

This site (in portuguese) explain how to build an MW antenna with 10 ferrite rods, a variable capacitor and a coil. It can be modified to work on LW also. Sarmento Campos (site owner) and Rene G Passold (builder) are members of DX Club of Brazil. The antenna was based on Gerry Thomas' "Super Booster Bar" published on National Radio Club Magazine.

http://paginas.terra.com.br/arte/sarmentocampos/LoopFerriteRGP3.htm
"

Although the site is in portuguese, it has enough pictures so I think one can build one without much problem.

I had the opportunity to see one of these RGP3 antennas (it is named after its buider). I visually inspect the LW/MW version. It seems it is:

a MW coil with 200-300uH aprox
a LW coil with 1200uH aprox
a variable capacitor, with two 365pf sections
a switch to made the selection between LW/MW.
(the coil is made with simple wire - not litz wire. It is thin and has the plastic cover, I think it is 26AWG)

On MW mode, the antenna use the MW coil plus one section of the variable capacitor.

On LW mode the antenna uses the MW in series with the LW coil (so the final inductance is about 1500uH). Also, the two sections of the variable are put in parallel (so it goes up to 700pf).

This weekend I played on a beach area with one of these using Sony 7600G and Degen DE1103. No connection is made between the antenna and the receiver, you just leave them side-by-side. The performance is spectacular for such small antenna. Stations and NDBs you can't hear with the internal antenna are clear using RGP3. Also, the selectivity seems to be very good, as you need to be careful while tunning the variable.

Unfortunatelly, the performance on Kenwood R1000 was not so good as on the portables. I tried to make a pickup coil with 10 turns and connect it to the R1000's MW/high impedance input. I didn't had time for more testing but I suspect the R1000 has a strong attenuator on MW to avoid BCB interference.

I am planning to build a smaller version of this antena, using only 3 ferrite rods and maybe a suitable pre-amplifier. Is there anybody interested on this also? :)

Hope this info is useful for the group!

Regards,

Huelbe Garcia
Brazil

124. Large fluted ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2007-05-10 21:56:45 UTC
From: John Popelish
Topic: 124 Message: 124

I have seen these on eBay a time or two, but could not find information on them. Today, I finally ran across some manufacturer's data, indicating their purpose. They are intended to be used in the manufacture of welded steel pipe.

http://www.ferroxcube.com/appl/info/impeders.pdf

They appear to be made of low frequency, power ferrite similar to what switching power supply transformers are made of, but they might be useful for low frequency (VLF through ELF) antenna cores.
They are quite conductive, so perhaps the radial slots (flutes) are there to reduce the eddy current heating at high excitation.

I'd like to have a few to play with.

125. Re: [ferriterodantennaexperimenters] Large fluted ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2007-05-11 09:47:11 UTC
From: ehydra
Topic: 124 Message: 125

Similar rods I've seen at www.neosid.de
A german ferrite manufacturer.

I think the radial slots are there to reduce the cracking possibility. Much current can crack ferrites.
In the inner there is a hole - maybe for water cooling.

regards -
Henry

www.ehydra.dyndns.info

-----Urspr?ngliche Nachricht-----
Von: "John Popelish" <jpopelish@...>
An: <ferriterodantennaexperimenters@yahoogroups.com>
Gesendet: Donnerstag, 10. Mai 2007 23:56
Betreff: [ferriterodantennaexperimenters] Large fluted ferrite rods

| I have seen these on eBay a time or two, but could not find
| information on them. Today, I finally ran across some manufacturer's
| data, indicating their purpose. They are intended to be used in the
| manufacture of welded steel pipe.
|
| http://www.ferroxcube.com/appl/info/impeders.pdf
|
| They appear to be made of low frequency, power ferrite similar to what
| switching power supply transformers are made of, but they might be
| useful for low frequency (VLF through ELF) antenna cores.
| They are quite conductive, so perhaps the radial slots (flutes) are
| there to reduce the eddy current heating at high excitation.
|
| I'd like to have a few to play with.
|
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| Yahoo! Groups Links
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126. Re: [ferriterodantennaexperimenters] Large fluted ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2007-05-11 11:39:18 UTC
From: John Popelish
Topic: 124 Message: 126

ehydra wrote:
> Similar rods I've seen at www.neosid.de
> A german ferrite manufacturer.
>
> I think the radial slots are there to reduce the cracking possibility. Much current can crack ferrites.
> In the inner there is a hole - maybe for water cooling.

After reading through this site and some others I found by using the key word "impeder" to my Google searches, it is pretty clear that the slots are all about coolant passage. Some are cooled by a one way coolant flow, and some designs have an out and back coolant path (through both radial slots and through center hole). There is also mention of the material resistivity in single digit ohms (probably meaning ohm cm) so there would be considerable eddy current around the rods if they were driven to near saturation.

127. Re: [ferriterodantennaexperimenters] Large fluted ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2007-05-11 12:16:59 UTC
From: ehydra
Topic: 124 Message: 127

Look at the power level they are capable! Wow.

I'm looking for a rod capable of 10 watts rf at 10MHz. Any suggestions? Fair-rite material 61 seems good.
Should be capable of transmitting AND good receive performance. Small transceiver design.
Do they send samples for free?

- Henry

www.ehydra.dyndns.info

-----Urspr?ngliche Nachricht-----
Von: "John Popelish" <jpopelish@...>
An: <ferriterodantennaexperimenters@yahoogroups.com>
Gesendet: Freitag, 11. Mai 2007 13:39
Betreff: Re: [ferriterodantennaexperimenters] Large fluted ferrite rods

| ehydra wrote:
| > Similar rods I've seen at www.neosid.de
| > A german ferrite manufacturer.
| >
| > I think the radial slots are there to reduce the cracking possibility. Much current can crack ferrites.
| > In the inner there is a hole - maybe for water cooling.
|
| After reading through this site and some others I found by
| using the key word "impeder" to my Google searches, it is
| pretty clear that the slots are all about coolant passage.
| Some are cooled by a one way coolant flow, and some designs
| have an out and back coolant path (through both radial slots
| and through center hole). There is also mention of the
| material resistivity in single digit ohms (probably meaning
| ohm cm) so there would be considerable eddy current around
| the rods if they were driven to near saturation.
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| Yahoo! Groups Links
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128. Re: [ferriterodantennaexperimenters] Large fluted ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2007-05-11 12:31:57 UTC
From: John Popelish
Topic: 124 Message: 128

ehydra wrote:
> Look at the power level they are capable! Wow.

Yes, but as transformer cores, not as antennas.

> I'm looking for a rod capable of 10 watts rf at 10MHz. Any suggestions? Fair-rite material 61 seems good.

If you want to generate 10 watts of RF output, I doubt there is a ferrite rod that will help. Small rod antennas do not couple very well to free space, so there must generally be a lot more energy sloshing around in the antenna than what escapes into space. This inefficiency can be compensated for in the receiving direction with amplifier gain.

In addition, this material (impeder rods) has its best performance in the 10kHz to 100kHz range.

> Should be capable of transmitting AND good receive performance. Small transceiver design.
> Do they send samples for free?

At this point I don't eve know if they will sell unit quantities.

129. Re: [ferriterodantennaexperimenters] Large fluted ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2007-05-11 12:47:29 UTC
From: ehydra
Topic: 124 Message: 129

Hi John -

There was a curve at 500kHz in the impeder diagram. So I think that is a point where the material will work efficient.
Why does a impeder won't radiate? The ends of the rod are open and that is the point where radiation escapes. I don't understand
your argumentation.
Does a impeder work by radiation coupling in the working material or by heating itself and heat transfer to the working material?

Anyway. back to fair-rite mat# 61:
I experienced with a unknown material for DCF77 clocks. A form of WWVB at 77.5kHz
Not so bad the results!
A material especially designed for shortwave should work remarkable better.

Just my 5 cents -
Henry

www.ehydra.dyndns.info

-----Urspr?ngliche Nachricht-----
Von: "John Popelish" <jpopelish@...>
An: <ferriterodantennaexperimenters@yahoogroups.com>
Gesendet: Freitag, 11. Mai 2007 14:31
Betreff: Re: [ferriterodantennaexperimenters] Large fluted ferrite rods

| ehydra wrote:
| > Look at the power level they are capable! Wow.
|
| Yes, but as transformer cores, not as antennas.
|
| > I'm looking for a rod capable of 10 watts rf at 10MHz. Any suggestions? Fair-rite material 61 seems good.
|
| If you want to generate 10 watts of RF output, I doubt there
| is a ferrite rod that will help. Small rod antennas do not
| couple very well to free space, so there must generally be a
| lot more energy sloshing around in the antenna than what
| escapes into space. This inefficiency can be compensated
| for in the receiving direction with amplifier gain.
|
| In addition, this material (impeder rods) has its best
| performance in the 10kHz to 100kHz range.
|
| > Should be capable of transmitting AND good receive performance. Small transceiver design.

```
| > Do they send samples for free?
|
| At this point I don't eve know if they will sell unit
| quantities.
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| Yahoo! Groups Links
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130. Re: [ferriterodantennaexperimenters] Large fluted ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2007-05-11 13:09:34 UTC
From: John Popelish
Topic: 124 Message: 130

ehydra wrote:
> Hi John -
>
> There was a curve at 500kHz in the impeder diagram.
> So I think that is a point where the material will work
efficient.
> Why does a impeder won't radiate? The ends of the rod
> are open and that is the point where radiation escapes.
> I don't understand your argumentation.

My argument is not specifically about rod antennas, but is a generality about any very small (relative to radiated wavelength) antennas. It makes little difference whether the antenna in question is one that produces magnetic field or electric field. As long as the field pattern is much smaller than a radiated wavelength, then little of the energy in the field during any cycle will escape into radiation.

> Does a impeder work by radiation coupling
> in the working material or by heating itself
> and heat transfer to the working material?

I think they are just a high permeability flux medium, to concentrate the circulating currents transformed from the primary coil to the iron being welded. The iron being heated acts as a one turn secondary in a poorly coupled transformer. That turn has a break that is being melted together as the pipe is formed in a continuous process. The ferrite impeder helps to concentrate the shorted turn current near the weld in progress, rather than having it spread out to parts of the pipe already welded closed.

I'm guessing about all this.

> Anyway. back to fair-rite mat# 61:
> I experienced with a unknown material for DCF77 clocks.
> A form of WWVB at 77.5kHz
> Not so bad the results!

Any of the Fair-Rite 60 series ferrite (low loss perminvar formulas of cobalt doped nickel zinc ferrite) will have higher performance as a receiving antenna than power materials (manganese zinc ferrite that has higher permeability, saturation flux and conductivity), if the frequency is above a MHz. At 77.5 kHz, the power materials might well outperform, because of their higher permeability

at that lower frequency.

> A material especially designed for shortwave should work remarkable better.

The performance is a trade off between loss and permeability. The small signal permeability of any given ferrite (the effective permeability with very small flux swings, as you see with receiving antennas) can be a lot lower than the permeability you see for larger flux swings and which is specified on the data sheet.

131. Re: [ferriterodantennaexperimenters] Large fluted ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2007-05-11 17:56:26 UTC
From: ehydra
Topic: 124 Message: 131

Hello John -

Sure, for very small ratio between wavelength and antenna size it depends roughly exp(4). So the question arises, where is the
break-even point between decreasing ferrite rod efficiency (more losses) and better radiation resistance.
Example: Multiplying frequency by TWO gives TWO^4 better radiation power. If the rod power loss drops from 100% to 50% by doubling
frequency, you have in summary a benefit of 8 times. Not bad!

If this antenna works on the receiving end too, you gain 8^2 = 64 !

Of course, size can depend on other factors too.
An upper bound is how high one can go technological. If you own a 10MHz scope only, it is almost impossible to construct a 100MHz
amp.

If I can push 1 watts out I would be happy! That should give me some miles.

I do several experiments at the moment. Must wait for material, etc.

What's with your transmission line SPICE simulation? Does it work? Any core data fitted to reality?
I'm interested. Is it possible to send the PSPICE file? I use LTspice but it should read generic PSPICE too. Even some HSPICE works.

Regards -
Henry

www.ehydra.dyndns.info

-----Urspr?ngliche Nachricht-----
Von: "John Popelish" <jpopelish@...>
An: <ferriterodantennaexperimenters@yahoogroups.com>
Gesendet: Freitag, 11. Mai 2007 15:09
Betreff: Re: [ferriterodantennaexperimenters] Large fluted ferrite rods

| ehydra wrote:
| > Hi John -
| >
| > There was a curve at 500kHz in the impeder diagram.
| > So I think that is a point where the material will work
| efficient.
| > Why does a impeder won't radiate? The ends of the rod
| > are open and that is the point where radiation escapes.
| > I don't understand your argumentation.
|

| My argument is not specifically about rod antennas, but is a
| generality about any very small (relative to radiated
| wavelength) antennas. It makes little difference whether
| the antenna in question is one that produces magnetic field
| or electric field. As long as the field pattern is much
| smaller than a radiated wavelength, then little of the
| energy in the field during any cycle will escape into radiation.
|
| > Does a impeder work by radiation coupling
| > in the working material or by heating itself
| > and heat transfer to the working material?
|
| I think they are just a high permeability flux medium, to
| concentrate the circulating currents transformed from the
| primary coil to the iron being welded. The iron being
| heated acts as a one turn secondary in a poorly coupled
| transformer. That turn has a break that is being melted
| together as the pipe is formed in a continuous process. The
| ferrite impeder helps to concentrate the shorted turn
| current near the weld in progress, rather than having it
| spread out to parts of the pipe already welded closed.
|
| I'm guessing about all this.
|
| > Anyway. back to fair-rite mat# 61:
| > I experienced with a unknown material for DCF77 clocks.
| > A form of WWVB at 77.5kHz
| > Not so bad the results!
|
| Any of the Fair-Rite 60 series ferrite (low loss perminvar
| formulas of cobalt doped nickel zinc ferrite) will have
| higher performance as a receiving antenna than power
| materials (manganese zinc ferrite that has higher
| permeability, saturation flux and conductivity), if the
| frequency is above a MHz. At 77.5 kHz, the power materials
| might well outperform, because of their higher permeability
| at that lower frequency.
|
| > A material especially designed for shortwave should work
| remarkable better.
|
| The performance is a trade off between loss and
| permeability. The small signal permeability of any given
| ferrite (the effective permeability with very small flux
| swings, as you see with receiving antennas) can be a lot
| lower than the permeability you see for larger flux swings
| and which is specified on the data sheet.
|
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| Yahoo! Groups Links
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132. Recommendastions on ferrite bundling for a home 'superstick'

Yahoo group: ferriterodantennaexperimenters
Date: 2007-05-16 04:12:32 UTC
From: huelbeag
Topic: 132 Message: 132

Hello all!

Although I have been reading several posts here and there, it was not clear for me what would be a recommended configuration when bundling ferrite rods.

For example:

this antenna from a DXer friend of mine (http://paginas.terra.com.br/arte/sarmentocampos/LoopFerriteRGP3.htm <http://paginas.terra.com.br/arte/sarmentocampos/LoopFerriteRGP3.htm>) is strongly based on Gerry Thomas' Super Booster Bar and uses 10 ferrite bars of 9 x 3/8 inches (22cmx0.95cm) bundled as a big one, inside a 9.2 x 1.5 (23cm x 3.8cm) PVC pipe.

'Everyday Practical Electronics' (an UK magazine) also suggests a similar mount on their article 'Active Ferrite Loop Aerial (Antenna)' (see http://www.epemag.com/0900p2.html <http://www.epemag.com/0900p2.html> for a small pic). They even say more than 7 ferrite rods do not brought any big benefit.

However, other experimenters (testimonials were read through newsgroups) recommended a not-so-thick (say 1 inch) but very long bundling (for exemple: 12, 18 or even more inches).

Actually, the readings were very interesting! Some concepts (like: noise figure on ferrite and air core loops, coil winding area, contra-winding, shielding and balancing) are now known and much clearer to me thanks you posts on this group and other groups and forum on the web :)

My idea is something of usage and final appearance is near the Radioplus products. I would start with a passive antenna, then I would build an balanced amplifier.

I would be very glad to read all your opinions and suggestions on total ferrite rod size, bundling-format and coil winding.

Best regards!

Huelbe Garcia
Brazil

133. Re: [ferriterodantennaexperimenters] Large fluted ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2007-05-11 16:38:33 UTC
From: Paul Birke
Topic: 124 Message: 133

Dear John

wonder what cooling liquid is used

in transformers we used transformer oil which is a modified
mineral oil

initially back in the early 1900s it was chosen not so much for its dielectric properties
but exactly for its thermal characteristics

so mineral oil from walmart or local drugstore could be used in some kind of closed loop
system

wonder if those water pumps for ponds and fish tanks could be used

mineral oil is a bit more like water than maple syrup LOL

need to build a closed loop system thru a finned cooler
again the fins could be obtained from the air conditioning technology

I assume the ferrites need cooling when operate as transformer elements for transmitters

anyways we had discussed these slots for some time thinking there were to break up
the eddy current paths and hence reduce loss

interesting to find they are cooling slots for where the rf is creating most of its surface
heat

best wishes

Paul

----- Original Message ----
From: John Popelish <jpopelish@...>
To: ferriterodantennaexperimenters@yahoogroups.com
Sent: Friday, May 11, 2007 7:39:18 AM
Subject: Re: [ferriterodantennaexperimenters] Large fluted ferrite rods

ehydra wrote:
> Similar rods I've seen at www.neosid.de
> A german ferrite manufacturer.
>
> I think the radial slots are there to reduce the cracking possibility. Much current can
crack ferrites.
> In the inner there is a hole - maybe for water cooling.

After reading through this site and some others I found by
using the key word "impeder" to my Google searches, it is
pretty clear that the slots are all about coolant passage.

Some are cooled by a one way coolant flow, and some designs have an out and back coolant path (through both radial slots and through center hole). There is also mention of the material resistivity in single digit ohms (probably meaning ohm cm) so there would be considerable eddy current around the rods if they were driven to near saturation.

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134. Re: [ferriterodantennaexperimenters] Large fluted ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2007-05-11 18:10:16 UTC
From: Paul Birke
Topic: 124 Message: 134

----- Original Message ----
From: ehydra <ehydra@...>
To: ferriterodantennaexperimenters@yahoogroups.com
Sent: Friday, May 11, 2007 1:56:26 PM
Subject: Re: [ferriterodantennaexperimenters] Large fluted ferrite rods

Hello John -

Sure, for very small ratio between wavelength and antenna size it depends roughly exp(4). So the question arises, where is the

break-even point between decreasing ferrite rod efficiency (more losses) and better radiation resistance.

typically this is at the corner of the engineering curve
if you can plot in a linear manner firstly (and maybe logs next if needed) the efficiency radiation resistance and there is a corner then the value you want is near tuhe corner

best
Paul V Birke PEng
Guelph

Example: Multiplying frequency by TWO gives TWO^4 better radiation power. If the rod power loss drops from 100% to 50% by doubling

frequency, you have in summary a benefit of 8 times. Not bad!

If this antenna works on the receiving end too, you gain 8^2 = 64 !

Of course, size can depend on other factors too.

An upper bound is how high one can go technological. If you own a 10MHz scope only, it is almost impossible to construct a 100MHz

amp.

If I can push 1 watts out I would be happy! That should give me some miles.

I do several experiments at the moment. Must wait for material, etc.

What's with your transmission line SPICE simulation? Does it work? Any core data fitted to reality?

I'm interested. Is it possible to send the PSPICE file? I use LTspice but it should read generic PSPICE too. Even some HSPICE works.

Regards -

Henry

www.ehydra.dyndns. info

-----Ursprüngliche Nachricht--- --

Von: "John Popelish" <jpopelish@rica. net>

An: <ferriterodantennaex perimenters@ yahoogroups. com>

Gesendet: Freitag, 11. Mai 2007 15:09

Betreff: Re: [ferriterodantennae xperimenters] Large fluted ferrite rods

| ehydra wrote:

| > Hi John -

| >

| > There was a curve at 500kHz in the impeder diagram.

| > So I think that is a point where the material will work

| efficient.

| > Why does a impeder won't radiate? The ends of the rod

| > are open and that is the point where radiation escapes.

| > I don't understand your argumentation.

|

| My argument is not specifically about rod antennas, but is a

| generality about any very small (relative to radiated

| wavelength) antennas. It makes little difference whether

| the antenna in question is one that produces magnetic field

| or electric field. As long as the field pattern is much

| smaller than a radiated wavelength, then little of the

| energy in the field during any cycle will escape into radiation.

|

| > Does a impeder work by radiation coupling

| > in the working material or by heating itself

| > and heat transfer to the working material?

|

| I think they are just a high permeability flux medium, to

| concentrate the circulating currents transformed from the
| primary coil to the iron being welded. The iron being
| heated acts as a one turn secondary in a poorly coupled
| transformer. That turn has a break that is being melted
| together as the pipe is formed in a continuous process. The
| ferrite impeder helps to concentrate the shorted turn
| current near the weld in progress, rather than having it
| spread out to parts of the pipe already welded closed.
|
| I'm guessing about all this.
|
| > Anyway. back to fair-rite mat# 61:
| > I experienced with a unknown material for DCF77 clocks.
| > A form of WWVB at 77.5kHz
| > Not so bad the results!
|
| Any of the Fair-Rite 60 series ferrite (low loss perminvar
| formulas of cobalt doped nickel zinc ferrite) will have
| higher performance as a receiving antenna than power
| materials (manganese zinc ferrite that has higher
| permeability, saturation flux and conductivity) , if the
| frequency is above a MHz. At 77.5 kHz, the power materials
| might well outperform, because of their higher permeability
| at that lower frequency.
|
| > A material especially designed for shortwave should work
| remarkable better.
|
| The performance is a trade off between loss and

| permeability. The small signal permeability of any given

| ferrite (the effective permeability with very small flux

| swings, as you see with receiving antennas) can be a lot

| lower than the permeability you see for larger flux swings

| and which is specified on the data sheet.

|

|

|

| Yahoo! Groups Links

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135. Re: [ferriterodantennaexperimenters] Large fluted ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2007-05-16 21:24:41 UTC
From: John Popelish
Topic: 124 Message: 135

Paul Birke wrote:
> Dear John
>
> wonder what cooling liquid is used

I could only speculate. I think the rods are placed inside
a coolant containing sleeve that the pipe slides over as it
is welded. But that is an opinion just based on some crude
pictures. I want to have a guided tour of a pipe welding
factory, now.

> in transformers we used transformer oil which is a modified
> mineral oil
>
> initially back in the early 1900s it was chosen not so much for its dielectric properties
> but exactly for its thermal characteristics
>
> so mineral oil from walmart or local drugstore could be used in some kind of closed loop
system
>
> wonder if those water pumps for ponds and fish tanks could be used
>
> mineral oil is a bit more like water than maple syrup LOL

Yes, I think mineral oil can be made in almost any
viscosity, with the boiling point roughly proportional to
the viscosity. Think kerosene. The biggest problem with
higher viscosity oils is not so much the pumping power, but
the thick boundary layer that traps heat.

> need to build a closed loop system thru a finned cooler
> again the fins could be obtained from the air conditioning technology
>
> I assume the ferrites need cooling when operate as transformer elements for transmitters

I hadn't seriously considered that ferrite might ever be
used in a transmitting antenna above micro power.

> anyways we had discussed these slots for some time thinking there were to break up
> the eddy current paths and hence reduce loss
>
> interesting to find they are cooling slots for where the rf is creating most of its
surface heat

... or direct radiated heat absorbed from the weld bead.

136. Re: [ferriterodantennaexperimenters] Recommendastions on ferrite bundling for a home 'superstick'

Yahoo group: ferriterodantennaexperimenters
Date: 2007-05-16 23:52:24 UTC
From: John Popelish
Topic: 132 Message: 136

huelbeag wrote:
> Hello all!
>
> Although I have been reading several posts here and there, it was not
> clear for me what would be a recommended configuration when bundling
> ferrite rods.
>
> For example:
>
> this antenna from a DXer friend of mine (
> http://paginas.terra.com.br/arte/sarmentocampos/LoopFerriteRGP3.htm
> <http://paginas.terra.com.br/arte/sarmentocampos/LoopFerriteRGP3.htm>
>) is strongly based on Gerry Thomas' Super Booster Bar and uses 10
> ferrite bars of 9 x 3/8 inches (22cmx0.95cm) bundled as a big one,
> inside a 9.2 x 1.5 (23cm x 3.8cm) PVC pipe.
>
> 'Everyday Practical Electronics' (an UK magazine) also suggests a
> similar mount on their article 'Active Ferrite Loop Aerial
> (Antenna)' (see http://www.epemag.com/0900p2.html
> <http://www.epemag.com/0900p2.html> for a small pic). They even say
> more than 7 ferrite rods do not brought any big benefit.
>
> However, other experimenters (testimonials were read through newsgroups)
> recommended a not-so-thick (say 1 inch) but very long bundling (for
> exemple: 12, 18 or even more inches).
(snip)

As long as the permeability of the ferrite is a lot more
than the length divided by the diameter, I think there is
very little additional benefit produced by increasing the
cross sectional area. The rod is already an effective
magnetic short across than length of space and will already
have effectively concentrated the flux from an approximately
spherical volume of with a diameter about the same as the
rod length. Unless rod propagation resonance or some other
nonlinear effect comes into play, I think the best use of
any given mass of ferrite is to use a length to diameter
ration roughly equal to the effective permeability of the
material.

Here is a graph (at the bottom) that shows the effective
permeability of a rod based on the material permeability and
the length to diameter ratio.

http://www.amidoncorp.com/aai_ferriterods.htm

I think the most effective use of any given rod is somewhere on the knee between the slope on the left and the horizontal value at the right side of the graph. If you are on the slope, where the material permeability makes little difference, the rod is too short or fat. If you are way out on the horizontal part of the curve, the rod is too long or thin.

Keep in mind that the small signal effectively permeability may be a lot less than the permeability spec given for the material at a high excitation.

137. Re: [ferriterodantennaexperimenters] Large fluted ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2007-05-16 23:54:11 UTC
From: Paul Birke
Topic: 124 Message: 137

----- Original Message ----
From: John Popelish <jpopelish@...>
To: ferriterodantennaexperimenters@yahoogroups.com
Sent: Wednesday, May 16, 2007 5:24:41 PM
Subject: Re: [ferriterodantennaexperimenters] Large fluted ferrite rods

Paul Birke wrote:

> Dear John

>

> wonder what cooling liquid is used

I could only speculate. I think the rods are placed inside

a coolant containing sleeve that the pipe slides over as it

is welded. But that is an opinion just based on some crude

pictures. I want to have a guided tour of a pipe welding

factory, now.
interesting

> in transformers we used transformer oil which is a modified

> mineral oil

>

> initially back in the early 1900s it was chosen not so much for its dielectric properties

> but exactly for its thermal characteristics

>

> so mineral oil from walmart or local drugstore could be used in some kind of closed loop system

>

> wonder if those water pumps for ponds and fish tanks could be used

>

> mineral oil is a bit more like water than maple syrup LOL

Yes, I think mineral oil can be made in almost any

viscosity, with the boiling point roughly proportional to

the viscosity. Think kerosene. The biggest problem with

higher viscosity oils is not so much the pumping power, but

the thick boundary layer that traps heat.

something I never appreciated although you must excuse my as my background is EE however fluid mechanics has always interested me
really a frustrated aeronautical engineer (not really but I always wanted to be that when Iwas young till I found how hard it was to get in at U of Toronto so in a way had to settle for electrical
anyways you seem to have good knowledge on fluid mechanics

I assume thicker boundary layers are in a of themselves not a good thing
reduces heat transfer

> need to build a closed loop system thru a finned cooler

> again the fins could be obtained from the air conditioning technology

>

> I assume the ferrites need cooling when operate as transformer elements for transmitters

I hadn't seriously considered that ferrite might ever be

used in a transmitting antenna above micro power.

well they are used in toroids and paralleled for the ham transmitters from what I have seen

> anyways we had discussed these slots for some time thinking there were to break up

> the eddy current paths and hence reduce loss

>

> interesting to find they are cooling slots for where the rf is creating most of its surface heat

... or direct radiated heat absorbed from the weld bead.

touche very good John

best
Paul

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138. Re: [ferriterodantennaexperimenters] Large fluted ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2007-05-22 03:09:26 UTC
From: John Popelish
Topic: 124 Message: 138

Paul Birke wrote:

> John Popelish <jpopelish@...> wrote
(snip)
>> Yes, I think mineral oil can be made in almost any
>> viscosity, with the boiling point roughly proportional to
>> the viscosity. Think kerosene. The biggest problem with
>> higher viscosity oils is not so much the pumping power, but
>> the thick boundary layer that traps heat.
>
> something I never appreciated although you must excuse my as my background
> is EE however fluid mechanics has always interested me
> really a frustrated aeronautical engineer
> (not really but I always wanted to be that when I
> was young till I found how hard it was to get in
> at U of Toronto so in a way had to settle for electrical
> anyways you seem to have good knowledge on fluid mechanics

Probably something I have picked up working in an industrial
production and power house job.

> I assume thicker boundary layers are in a of themselves
> not a good thing
> reduces heat transfer

Right. Oil is a really bad conductor of heat through a
stagnant layer. It carries away heat only through
convection (bulk circulation). Any boundary layer just
wraps the surface in good thermal insulation. Have you ever
noticed that you can splash hot frying bacon grease on your
hand and if you go immediately to a cold water rinse, you
have a chance to remove it before it burns you. Boiling
water that has a lower temperature will burn you faster.

John Popelish

139. [ferriterodantennaexperimenters] glued ferrite rod

Yahoo group: ferriterodantennaexperimenters
Date: 2007-06-01 07:39:00 UTC
From: ehydra
Topic: 139 Message: 139

Hello John -

You experimented a while back with glued ferrite rods made of smaller ferrites.

Does it work? Do you expect a permeability drop?

I'm also interested in performance of self-made powder rods. Don't know if ordinary iron powder will work if insulated in fluid, or
is an oxide always needed?

regards -
Henry

www.ehydra.dyndns.info

140. Re: [ferriterodantennaexperimenters] glued ferrite rod

Yahoo group: ferriterodantennaexperimenters
Date: 2007-06-01 14:37:56 UTC
From: John Popelish
Topic: 139 Message: 140

ehydra wrote:
> Hello John -

I'm guessing that you are talking to me, John Popelish.

> You experimented a while back with glued ferrite rods made of smaller ferrites.

Yes. I used long form ferrite beads intended as EMI suppressors to be placed on wires. I lapped some flat for minimum gaps and glued them together, clamped some together with nylon threaded rods and added gap spacers between some. The archive of old messages contains my posts on these experiments and the files and photo sections of the web site for the group hold lots of details.

> Does it work? Do you expect a permeability drop?

I expected a permeability loss about proportional to the gaps as a fraction of the total length. Since I was using beads about an inch long, and expected the minimum gap to be around a thousandth of an inch, I think it would be impossible for my rods to have an effective permeability higher than that length to gap ratio or about 1000. But since the materials I was using have advertised initial permeabilities of about 125, 850 and 5000 (type 25, 28 and LF) only the highest permeability material is much affected by the gaps. Besides, the very low excitation permeability of these materials is a small fraction (say, 1/4) of the advertised initial permeability. So even less worry about the gaps.

Then, when I got to comparing coil Q in various experiments, I discovered that adding small intentional gaps improved the coil Q, in some cases. So, till you get to really optimizing something, I say, don't worry about the effect of stacking cores. The qualities of the material are more important.

> I'm also interested in performance of self-made powder rods. Don't know if ordinary iron powder will work if insulated in fluid, or
> is an oxide always needed?

Some kind of insulation is needed, to reduce eddy current losses. But it doesn't take much. It is difficult to mix enough iron particles with epoxy resin to make a good conductive mixture. But for the same reason, it is difficult to make a mixture that has a high permeability (a

good conductor for magnetic flux). I recorded the results of my attempts to make cores of magnetic wires, potted in epoxy. The results were pretty lame except at extremely low frequency. None came close to how well the LF ferrite material bead stacks worked.

Is there a frequency range that most interests you? Knowing that would narrow down the better possibilities quite a bit.

141. Re: [ferriterodantennaexperimenters] glued ferrite rod

Yahoo group: ferriterodantennaexperimenters
Date: 2007-06-01 17:33:52 UTC
From: ehydra
Topic: 139 Message: 141

Hi John -
|
| I'm guessing that you are talking to me, John Popelish.
Indeed.

|
| > You experimented a while back with glued ferrite rods made of smaller ferrites.
|
| Yes. I used long form ferrite beads intended as EMI
| suppressors to be placed on wires. I lapped some flat for
| minimum gaps and glued them together, clamped some together
| with nylon threaded rods and added gap spacers between some.
| The archive of old messages contains my posts on these
| experiments and the files and photo sections of the web site
| for the group hold lots of details.

I read a lot of older messages but it seems I cannot accumulate useful data.
So I ask directly - sorry.

|
| > Does it work? Do you expect a permeability drop?
|
| I expected a permeability loss about proportional to the
| gaps as a fraction of the total length. Since I was using
| beads about an inch long, and expected the minimum gap to be
| around a thousandth of an inch, I think it would be
| impossible for my rods to have an effective permeability
| higher than that length to gap ratio or about 1000. But
| since the materials I was using have advertised initial
| permeabilities of about 125, 850 and 5000 (type 25, 28 and
| LF) only the highest permeability material is much affected
| by the gaps. Besides, the very low excitation permeability
| of these materials is a small fraction (say, 1/4) of the
| advertised initial permeability. So even less worry about
| the gaps.

I learned out of a amidon diagram that the rod needs a useful ratio length to diameter. I think about factor 6 to 8.
After all you can see in the diagram that the effective permeability is a lot smaller than the published material datasheet.

What is excitation permeability?

|
| Then, when I got to comparing coil Q in various experiments,
| I discovered that adding small intentional gaps improved the

| coil Q, in some cases. So, till you get to really
| optimizing something, I say, don't worry about the effect of
| stacking cores. The qualities of the material are more
| important.

Maybe a cheap way to get an useful rod?!

|
| > I'm also interested in performance of self-made powder rods. Don't know if ordinary
iron powder will work if insulated in fluid,
or
| > is an oxide always needed?
|
| Some kind of insulation is needed, to reduce eddy current
| losses. But it doesn't take much. It is difficult to mix
| enough iron particles with epoxy resin to make a good
| conductive mixture. But for the same reason, it is
| difficult to make a mixture that has a high permeability (a
| good conductor for magnetic flux). I recorded the results
| of my attempts to make cores of magnetic wires, potted in
| epoxy. The results were pretty lame except at extremely low
| frequency. None came close to how well the LF ferrite
| material bead stacks worked.
|
| Is there a frequency range that most interests you? Knowing
| that would narrow down the better possibilities quite a bit.

I'm experimenting at 7MHz at the moment - with an unkown core material. Probably a core for small mw radios out of china production.
I ordered some SPECIFIED samples at the usual manufacturers but must wait weeks that the rods will arrive...
In the end the figure of merit should be maximized communication distance for a small transceiver using the rod as transmitting
antenna also!
The frequency is not so important. I can (almost) modify it as needed by the material.

I use a NE612 in the input stage with a electrostatic shielded coil. Output is a class-E MOSFET stage.

As I understand ferrite rod antenna theory the radiation efficiency increases with frequency^4. Ferrite permeability increases the
antenna efficiency with u^2. Of course, all as long as you stay below the magnetic corner frequency. Sorry for maybe wrong
declaration words ;-)

If somebody know of a good explanation of magnetic properties useful for antennas, I were interested.
I found several patents on the theme, some are very mystical. For example, someone says placing a magnet longitudinal to the rod,
this will increase signal in the rod. I played a while with a magnet but cannot see any effect.

You placed magnetic wires as a rod? I don't understand what that mean.

regards -
Henry

142. Re: [ferriterodantennaexperimenters] glued ferrite rod

Yahoo group: ferriterodantennaexperimenters
Date: 2007-06-01 21:29:52 UTC
From: John Popelish
Topic: 139 Message: 142

ehydra wrote:

> I read a lot of older messages but it seems I cannot accumulate useful data.
> So I ask directly - sorry.

In the files section of this group, I have created a folder
called Popelish, in which I have posted PDF files describing
my experiments with segmented rods, and also the results
with the wire bundle rods.

http://groups.yahoo.com/group/ferriterodantennaexperimenters/files/>

The photos section of the group archive shows what some of
these assembled rods and test coils look like.

http://ph.groups.yahoo.com/group/ferriterodantennaexperimenters/photos/browse/3113

> I learned out of a amidon diagram that the rod needs a useful ratio length to diameter. I think about factor 6 to 8.
> After all you can see in the diagram that the effective permeability is a lot smaller than the published material datasheet.
>
> What is excitation permeability?

The material permeability that is a function of the applied
magnetic field (excitation), i.e. ampere turns per meter.
There is some minimum field strength needed for most
ferrites to hit their maximum permeability, and received
fields are generally much smaller than this minimum, so the
actual permeability will be lower than the value on the data
sheet.

> Maybe a cheap way to get an useful rod?!

That was my hope.

(snip)
> | Is there a frequency range that most interests you? Knowing
> | that would narrow down the better possibilities quite a bit.
>
> I'm experimenting at 7MHz at the moment - with an unkown core material. Probably a core for small mw radios out of china production.
> I ordered some SPECIFIED samples at the usual manufacturers but must wait weeks that the rods will arrive...
> In the end the figure of merit should be maximized communication distance for a small transceiver using the rod as transmitting
> antenna also!

> The frequency is not so important. I can (almost) modify it as needed by the material.

For anything near 7 MHz, only the high frequency material
(HF or type 25) from Steward (permeability around 125) would
be much use. The really good stuff would be the Perminvar
low loss 60 series ferrites from Fair-Rite, or their equivalent.

This 8 megabyte PDF is their current catalog:
http://www.fair-rite.com/newfair/pdf/15th_Edition_Fair-Rite_Catalog.pdf#page=1

Take a look at material 61 and 52.

Some rods are made with these materials.

There is an eBay seller in Lithuania, who sells mid band
rods made in Russia at fairly low prices. You might play
with those. I bought a batch of these, and they appear to
be pretty good at a couple MHz.
http://cgi.ebay.com/Large-balun-ferrite-rods-10x200mm-Lot-of-8_W0QQitemZ200113929875

(snip)
> You placed magnetic wires as a rod? I don't understand what that mean.

I made a rod with soft iron wire of a couple mm diameter
strands, and one with much thiner wires made of some exotic
alloy, perhaps Kovar. There are photos of each the folder I
linked to, above. Neither competed with the low frequency
ferrite material.

143. Re: [ferriterodantennaexperimenters] glued ferrite rod

Yahoo group: ferriterodantennaexperimenters
Date: 2007-06-05 02:33:55 UTC
From: huelbe_garcia@fastimap.com
Topic: 139 Message: 143

Hi group, John Popelish and Henry,

Coincidentally, I received this morning an order of 8 200mmX10mm (aprox 7.8 x 0.39 inches) ferrite rods. The vendor is named Alexer1, from Ukrania and his eBay site is http://stores.ebay.com/SOVCOM . He/she works with Paypal (very important for me who lives in Brazil where every international method payment is VERY expensive but credit card and Paypal.) It took 30 days.

I have not checked closely the ferrites. The packaging is very 'simple' (cardbox, styrofoam and wrapped paper), but all rods survived the trip. These rods are u=400 nominal.

--hg

144. Re: [ferriterodantennaexperimenters] Recommendastions on ferrite bundling for a home 'superstick'

Yahoo group: ferriterodantennaexperimenters
Date: 2007-06-05 03:03:33 UTC
From: huelbe_garcia@fastimap.com
Topic: 132 Message: 144
Attachments: 1 described; binary payloads are missing from this source WARC

Hello Mr Popelish and group! Good evening!

I am terribly sorry for asking that, dear John, but would mind sharing you opinion or feeling about these 'giant' ferrite rod antennas made of several ferrites in a way to increase its diameter? What one gains increasing the diameter?

I found one more article: QEX Mar/Apr 2000 - 'A Giant LF Loopstick' by Richard Q. Marris G2BZQ. He proposes a LF antenna with 12 ferrite rods forming one big rod with 12 inches long and 1.25 inches diameter.

The author says 'experiments done over the years have shown that a large-diameter long rod provides substantially greater selectivity, sensitivity and directivity than a small-diameter short rod, as those used in transistor radios.'

My intuition (as I am not a electronics guys) points Marris' giant loopstick has

. its 'grand total' permeability is the same of the ferrites used (u=125 in the article)

. such a good performance due the very large coil diameter. Usually, coils with ferrite rods cores have a diamenter of 0.375 inches. Marris is 1.25 aprox (3 times in diameter, 11 times in area).

. I read this one in a newsgroup or list (pity... I don't remember where): ferrites are expensive, amplification is not. Even cheaper is an air-core loop hihi :)

John, for example: how do you think loop antenna mad with one rod with 17 inches long and 0.375 inches diameter would compare with an loop antenna ferrite rod (bundle) of, say, 7 inches long and 1.25 inches diameter?

Thank you!

Huelbe Garcia
Brazil
p.s.: I apologize for the english errors :]

145. Re: [ferriterodantennaexperimenters] glued ferrite rod

Yahoo group: ferriterodantennaexperimenters
Date: 2007-06-05 03:07:29 UTC
From: John Popelish
Topic: 139 Message: 145

huelbe_garcia@... wrote:
> Hi group, John Popelish and Henry,
>
> Coincidentally, I received this morning an order of 8 200mmX10mm (aprox
> 7.8 x 0.39 inches) ferrite rods. The vendor is named Alexer1, from
> Ukrania and his eBay site is http://stores.ebay.com/SOVCOM . He/she
> works with Paypal (very important for me who lives in Brazil where every
> international method payment is VERY expensive but credit card and
> Paypal.) It took 30 days.
>
> I have not checked closely the ferrites. The packaging is very
> 'simple' (cardbox, styrofoam and wrapped paper), but all rods survived
> the trip. These rods are u=400 nominal.

I look forward to hearing about what you do with these and
how well they work.

146. Re: [ferriterodantennaexperimenters] Recommendastions on ferritebundling for a home 'superstick'

Yahoo group: ferriterodantennaexperimenters
Date: 2007-06-05 11:00:37 UTC
From: ehydra
Topic: 146 Message: 146

Hello Garcia -

It is a open question how accurate the ucraine seller knows the technical data of the rods. The stated ui=400 with rod dimensions and length/diameter=20 looks for me as an ordinary mw radio rod.
"Military" frequencies are more in the 50MHz range - or the rods are VERY VERY old. Probably before the 1950...

You can measure the Q at different frequencies. If it falls you have reached the (upper) working frequency of the rod.

The benefit of a wider diameter construction is that you have more output power. The signal is proportional to diameter AREA (=
diameter^2/4).
If money is of no concern as in military that is one way to increase signal.

Don't forget I'm not an expert.

You're measurement data is welcome!

regards -
Henry

www.ehydra.dyndns.info

-----Urspr?ngliche Nachricht-----
Von: <huelbe_garcia@...>
An: <ferriterodantennaexperimenters@yahoogroups.com>
Gesendet: Dienstag, 5. Juni 2007 05:03
Betreff: Re: [ferriterodantennaexperimenters] Recommendastions on ferritebundling for a home 'superstick'

| Hello Mr Popelish and group! Good evening!
|
| I am terribly sorry for asking that, dear John, but would mind sharing
| you opinion or feeling about these 'giant' ferrite rod antennas made of
| several ferrites in a way to increase its diameter? What one gains
| increasing the diameter?
|
| I found one more article: QEX Mar/Apr 2000 - 'A Giant LF Loopstick' by
| Richard Q. Marris G2BZQ. He proposes a LF antenna with 12 ferrite rods
| forming one big rod with 12 inches long and 1.25 inches diameter.
|
| The author says 'experiments done over the years have shown that a
| large-diameter long rod provides substantially greater selectivity,
| sensitivity and directivity than a small-diameter short rod, as those

| used in transistor radios.'
|
| My intuition (as I am not a electronics guys) points Marris' giant
| loopstick has
|
| . its 'grand total' permeability is the same of the ferrites used (u=125
| in the article)
|
| . such a good performance due the very large coil diameter. Usually,
| coils with ferrite rods cores have a diamenter of 0.375 inches. Marris
| is 1.25 aprox (3 times in diameter, 11 times in area).
|
| . I read this one in a newsgroup or list (pity... I don't remember
| where): ferrites are expensive, amplification is not. Even cheaper is an
| air-core loop hihi :)
|
|
| John, for example: how do you think loop antenna mad with one rod with
| 17 inches long and 0.375 inches diameter would compare with an loop
| antenna ferrite rod (bundle) of, say, 7 inches long and 1.25 inches
| diameter?
|
| Thank you!
|
| Huelbe Garcia
| Brazil
| p.s.: I apologize for the english errors :]
|
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| Yahoo! Groups Links
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147. Re: [BULK]Re: [ferriterodantennaexperimenters] Recommendastions on ferrite bundling for a home 'superstick'

Yahoo group: ferriterodantennaexperimenters
Date: 2007-06-05 22:20:23 UTC
From: John Popelish
Topic: 132 Message: 147

huelbe_garcia@... wrote:
(snip)
> My intuition (as I am not a electronics guys) points Marris' giant
> loopstick has
>
> . its 'grand total' permeability is the same of the ferrites used (u=125
> in the article)
>
> . such a good performance due the very large coil diameter. Usually,
> coils with ferrite rods cores have a diamenter of 0.375 inches. Marris
> is 1.25 aprox (3 times in diameter, 11 times in area).
>
> . I read this one in a newsgroup or list (pity... I don't remember
> where): ferrites are expensive, amplification is not. Even cheaper is an
> air-core loop hihi :)
>
>
> John, for example: how do you think loop antenna mad with one rod with
> 17 inches long and 0.375 inches diameter would compare with an loop
> antenna ferrite rod (bundle) of, say, 7 inches long and 1.25 inches
> diameter?

I think, at low frequency, it would outperform the shorter
thicker core. You might improve upon it slightly by placing
2 or 3 rods around the center of a stack of 4 rods, lined up
end to end, and winding the coil only around that thick part
(the middle 1/4 of the total length. There is no point I
can see to having the rod thick at the ends, where the
collected flux is very low.

148. Re: [BULK]Re: [ferriterodantennaexperimenters] Recommendastions on ferrite bundling for a home 'superstick'

Yahoo group: ferriterodantennaexperimenters
Date: 2007-06-06 18:19:23 UTC
From: ehydra
Topic: 132 Message: 148

Here is a example of a superstick:
http://www.cqham.ru/ant6.htm
(You can translate with babelfish)

I'm wondering about the empty space in the middle of the rod stack and coupling coils at the ends of the stick.

- Henry

-----Urspr?ngliche Nachricht-----
Von: "John Popelish" <jpopelish@...>
An: <ferriterodantennaexperimenters@yahoogroups.com>
Gesendet: Mittwoch, 6. Juni 2007 00:20
Betreff: Re: [BULK]Re: [ferriterodantennaexperimenters] Recommendastions on ferrite bundling for a home 'superstick'

| huelbe_garcia@... wrote:
| (snip)
| > My intuition (as I am not a electronics guys) points Marris' giant
| > loopstick has
| >
| > . its 'grand total' permeability is the same of the ferrites used (u=125
| > in the article)
| >
| > . such a good performance due the very large coil diameter. Usually,
| > coils with ferrite rods cores have a diamenter of 0.375 inches. Marris
| > is 1.25 aprox (3 times in diameter, 11 times in area).
| >
| > . I read this one in a newsgroup or list (pity... I don't remember
| > where): ferrites are expensive, amplification is not. Even cheaper is an
| > air-core loop hihi :)
| >
| >
| > John, for example: how do you think loop antenna mad with one rod with
| > 17 inches long and 0.375 inches diameter would compare with an loop
| > antenna ferrite rod (bundle) of, say, 7 inches long and 1.25 inches
| > diameter?
|
| I think, at low frequency, it would outperform the shorter
| thicker core. You might improve upon it slightly by placing
| 2 or 3 rods around the center of a stack of 4 rods, lined up
| end to end, and winding the coil only around that thick part
| (the middle 1/4 of the total length. There is no point I
| can see to having the rod thick at the ends, where the
| collected flux is very low.

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| Yahoo! Groups Links
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149. Re: [BULK]Re: [ferriterodantennaexperimenters] Recommendastions on ferrite bundling for a home 'superstick'

Yahoo group: ferriterodantennaexperimenters
Date: 2007-06-06 21:49:26 UTC
From: John Popelish
Topic: 132 Message: 149

ehydra wrote:
> Here is a example of a superstick:
> http://www.cqham.ru/ant6.htm
> (You can translate with babelfish)
>
> I'm wondering about the empty space in the middle of the rod stack and coupling coils at the ends of the stick.

With that length to diameter ratio. I suspect that adding a few turns to the coils would make an antenna that worked just as well with no ferrite in it. Why they chose that physical location for the output coils is also a mystery to me, though it is nice and symmetrical.

150. Re: [BULK]Re: [ferriterodantennaexperimenters] Recommendastions on ferrite bundling for a home 'superstick'

Yahoo group: ferriterodantennaexperimenters
Date: 2007-06-06 22:18:56 UTC
From: ehydra
Topic: 132 Message: 150

Hello John -

Maybe because they want to avoid coupling capacitance between resonating coil and pick-up coil. So they separated both.
And to have the system symmetrical you have obvious only one choice: To the outer.
The resonating coil located towards the midpoint optimizes Q.

Just my two euros.

Have you read that they work it as a transmitting antenna too?

- Henry

-----Urspr?ngliche Nachricht-----
Von: "John Popelish" <jpopelish@...>
An: <ferriterodantennaexperimenters@yahoogroups.com>
Gesendet: Mittwoch, 6. Juni 2007 23:49
Betreff: Re: [BULK]Re: [ferriterodantennaexperimenters] Recommendastions on ferrite bundling for a home 'superstick'

| ehydra wrote:
| > Here is a example of a superstick:
| > http://www.cqham.ru/ant6.htm
| > (You can translate with babelfish)
| >
| > I'm wondering about the empty space in the middle of the rod stack and coupling coils at the ends of the stick.
|
| With that length to diameter ratio. I suspect that adding a
| few turns to the coils would make an antenna that worked
| just as well with no ferrite in it. Why they chose that
| physical location for the output coils is also a mystery to
| me, though it is nice and symmetrical.
|
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| Yahoo! Groups Links
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151. Re: [BULK]Re: [ferriterodantennaexperimenters] Recommendastions on ferrite bundling for a home 'superstick'

Yahoo group: ferriterodantennaexperimenters
Date: 2007-06-06 22:27:02 UTC
From: John Popelish
Topic: 132 Message: 151

ehydra wrote:
> Hello John -
>
> Maybe because they want to avoid coupling capacitance between resonating coil and pick-up coil. So they separated both.
> And to have the system symmetrical you have obvious only one choice: To the outer.
> The resonating coil located towards the midpoint optimizes Q.

Wouldn't putting the input/output coil over the grounded
center of the resonator have lower capacitive coupling
across the resonator?

> Just my two euros.
>
> Have you read that they work it as a transmitting antenna too?

I haven't read the article, just looked at the pictures.

152. Re: [BULK]Re: [ferriterodantennaexperimenters] Recommendastions on ferrite bundling for a home 'superstick'

Yahoo group: ferriterodantennaexperimenters
Date: 2007-06-06 22:33:38 UTC
From: ehydra
Topic: 132 Message: 152

```
| > Maybe because they want to avoid coupling capacitance between resonating coil and
pick-up coil. So they separated both.
| > And to have the system symmetrical you have obvious only one choice: To the outer.
| > The resonating coil located towards the midpoint optimizes Q.
|
| Wouldn't putting the input/output coil over the grounded
| center of the resonator have lower capacitive coupling
| across the resonator?

I don't think so. Somewhere I've seen a diagram where layer stacking versus stray
capacitance for one coil on one rod was shown. It
is horrible! For high Q there is a need for exactly ONE layer.

|
| > Just my two euros.
| >
| > Have you read that they work it as a transmitting antenna too?
|
| I haven't read the article, just looked at the pictures.

Translate it with Babelfish.

- Henry

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| Yahoo! Groups Links
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153. Hello to the Group

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-01 08:43:22 UTC
From: Mark
Topic: 153 Message: 153

Hi All,

My name is Mark and I've played a bit with some ferrite rod antennas for longwave and AM listening. However, I'm hardly an expert.

I've created a folder in the photo section (under my ID name) with some photos of my latest project: A bundled rod antenna made from Russian rods picked up on ebay. The project is still in progress.

Hope to see some activity here.

Mark

154. RE: [ferriterodantennaexperimenters] Hello to the Group

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-04 23:10:59 UTC
From: Stumm, John C
Topic: 153 Message: 154

>Hi All,

>My name is Mark and I've played a bit with some ferrite rod antennas
>for longwave and AM listening. However, I'm hardly an expert.

>I've created a folder in the photo section (under my ID name) with some

>photos of my latest project: A bundled rod antenna made from Russian
>rods picked up on ebay. The project is still in progress.

>Hope to see some activity here.

Mark

Hello Mark,
Unfortunately this group has been pretty slow lately, (actually for
awhile)
I've dabbled a bit here too. Maybe is should post some pics of my latest
loop heads I've created for use with my Palomar base amp. Looks as if
you go soup to nuts with your's. Very impressive! Let us know how
initial tests go I have a Quantum pro that I use to compare performance
with. They are hard to beat. I'm currently working on noise rejection.

155. ferrite rods in plastic tubes

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-07 03:36:34 UTC
From: Paul V Birke PEng
Topic: 155 Message: 155

I have found it better to wind directly on a ferrite rod so as to obtain maximum signal transfer say at 1 to 10 MHz

when rods are bundled, they are sometimes placed in pcv tubes

this creates a space of 1/16" to 1/8" of air MUr=1.0 between the driving coil and the ferrite surface

have other found difficulties in signal reduction when placing ferrites sinlge or multiple in plastic tubes or is it just me?!

best
Paul V Birke PEng

156. Re: [ferriterodantennaexperimenters] ferrite rods in plastic tubes

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-10 19:51:17 UTC
From: aimo ruoho
Topic: 155 Message: 156

Thank you for mentioning this important and valuable experience, Paul!

I built a few months ago a quadruple loop of plastic tubes, and put inside the tubes ferrite rods, but on the tubes magnetic wire. It didn't work satisfactory at all, so it has been waiting for other type of rods. Amidon wants 10 USDollars for each of this type of ferrite rods, so I thought, that perhaps there are cheaper nearly corresponding rods somewhere?
If not, I have to wait and see, what to do with the loop.
..
Thanks again and 73 from Aimo

Paul V Birke PEng <nonlinear@...> wrote:
I have found it better to wind directly on a ferrite rod so as to
obtain maximum signal transfer say at 1 to 10 MHz

when rods are bundled, they are sometimes placed in pcv tubes

this creates a space of 1/16" to 1/8" of air MUr=1.0 between the
driving coil and the ferrite surface

have other found difficulties in signal reduction when placing
ferrites sinlge or multiple in plastic tubes or is it just me?!

best
Paul V Birke PEng

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157. Re: [ferriterodantennaexperimenters] ferrite rods in plastic tubes

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-11 01:43:55 UTC
From: Paul V Birke PEng
Topic: 155 Message: 157

Dear Aimo

sometimes the Russian very good rods (shortwave)with the higher frequency are available on ebay

these are ~ 200 mm * 10mm

best wishes
Paul

----- Original Message ----
From: aimo ruoho <aimounto@...>
To: ferriterodantennaexperimenters@yahoogroups.com
Sent: Sunday, February 10, 2008 2:51:17 PM
Subject: Re: [ferriterodantennaexperimenters] ferrite rods in plastic tubes

Thank you for mentioning this important and valuable experience, Paul!

I built a few months ago a quadruple loop of plastic tubes, and put inside the tubes ferrite rods, but on the tubes magnetic wire. It didn't work satisfactory at all, so it has been waiting for other type of rods. Amidon wants 10 USDollars for each of this type of ferrite rods, so I thought, that perhaps there are cheaper nearly corresponding rods somewhere?
If not, I have to wait and see, what to do with the loop.
..
Thanks again and 73 from Aimo

Paul V Birke PEng <nonlinear@rogers. com> wrote:
I have found it better to wind directly on a ferrite rod so as to
obtain maximum signal transfer say at 1 to 10 MHz

when rods are bundled, they are sometimes placed in pcv tubes

this creates a space of 1/16" to 1/8" of air MUr=1.0 between the
driving coil and the ferrite surface

have other found difficulties in signal reduction when placing
ferrites sinlge or multiple in plastic tubes or is it just me?!

best
Paul V Birke PEng

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<!--

```
#ygrp-mkp{
border:1px solid #d8d8d8;font-family:Arial;margin:14px 0px;padding:0px 14px;}
#ygrp-mkp hr{
border:1px solid #d8d8d8;}
#ygrp-mkp #hd{
color:#628c2a;font-size:85%;font-weight:bold;line-height:122%;margin:10px 0px;}
#ygrp-mkp #ads{
margin-bottom:10px;}
#ygrp-mkp .ad{
padding:0 0;}
#ygrp-mkp .ad a{
color:#0000ff;text-decoration:none;}
-->

<!--

#ygrp-sponsor #ygrp-lc{
font-family:Arial;}
#ygrp-sponsor #ygrp-lc #hd{
margin:10px 0px;font-weight:bold;font-size:78%;line-height:122%;}
#ygrp-sponsor #ygrp-lc .ad{
margin-bottom:10px;padding:0 0;}
-->

<!--

#ygrp-mlmsg {font-size:13px;font-family:arial, helvetica, clean, sans-serif;}
#ygrp-mlmsg table {font-size:inherit;font:100%;}
#ygrp-mlmsg select, input, textarea {font:99% arial, helvetica, clean, sans-serif;}
#ygrp-mlmsg pre, code {font:115% monospace;}
#ygrp-mlmsg * {line-height:1.22em;}
#ygrp-text{
font-family:Georgia;
}
#ygrp-text p{
margin:0 0 1em 0;}
#ygrp-tpmsgs{
font-family:Arial;
clear:both;}
#ygrp-vitnav{
padding-top:10px;font-family:Verdana;font-size:77%;margin:0;}
#ygrp-vitnav a{
padding:0 1px;}
#ygrp-actbar{
clear:both;margin:25px 0;white-space:nowrap;color:#666;text-align:right;}
#ygrp-actbar .left{
float:left;white-space:nowrap;}
.bld{font-weight:bold;}
#ygrp-grft{
font-family:Verdana;font-size:77%;padding:15px 0;}
#ygrp-ft{
font-family:verdana;font-size:77%;border-top:1px solid #666;
```

```
padding:5px 0;
}
#ygrp-mlmsg #logo{
padding-bottom:10px;}

#ygrp-vital{
background-color:#e0ecee;margin-bottom:20px;padding:2px 0 8px 8px;}
#ygrp-vital #vithd{
font-size:77%;font-family:Verdana;font-weight:bold;color:#333;text-transform:uppercase;}
#ygrp-vital ul{
padding:0;margin:2px 0;}
#ygrp-vital ul li{
list-style-type:none;clear:both;border:1px solid #e0ecee;
}
#ygrp-vital ul li .ct{
font-weight:bold;color:#ff7900;float:right;width:2em;text-align:right;padding-right:.5em;}
#ygrp-vital ul li .cat{
font-weight:bold;}
#ygrp-vital a{
text-decoration:none;}

#ygrp-vital a:hover{
text-decoration:underline;}

#ygrp-sponsor #hd{
color:#999;font-size:77%;}
#ygrp-sponsor #ov{
padding:6px 13px;background-color:#e0ecee;margin-bottom:20px;}
#ygrp-sponsor #ov ul{
padding:0 0 0 8px;margin:0;}
#ygrp-sponsor #ov li{
list-style-type:square;padding:6px 0;font-size:77%;}
#ygrp-sponsor #ov li a{
text-decoration:none;font-size:130%;}
#ygrp-sponsor #nc{
background-color:#eee;margin-bottom:20px;padding:0 8px;}
#ygrp-sponsor .ad{
padding:8px 0;}
#ygrp-sponsor .ad #hd1{
font-family:Arial;font-weight:bold;color:#628c2a;font-size:100%;line-height:122%;}
#ygrp-sponsor .ad a{
text-decoration:none;}
#ygrp-sponsor .ad a:hover{
text-decoration:underline;}
#ygrp-sponsor .ad p{
margin:0;}
o{font-size:0;}
.MsoNormal{
margin:0 0 0 0;}
#ygrp-text tt{
font-size:120%;}
```

```
blockquote{margin:0 0 0 4px;}
.replbq{margin:4;}
-->
```

158. Re: [ferriterodantennaexperimenters] ferrite rods in plastic tubes

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-11 22:41:35 UTC
From: aimo ruoho
Topic: 155 Message: 158

Please, Paul!
What kind or type of ferrite rods have you used?
How many turns and which type and thickness of wire have you used?
From where have you got those rods?
Aimo

Paul V Birke PEng <nonlinear@...> wrote:
I have found it better to wind directly on a ferrite rod so as to
obtain maximum signal transfer say at 1 to 10 MHz

when rods are bundled, they are sometimes placed in pcv tubes

this creates a space of 1/16" to 1/8" of air MUr=1.0 between the
driving coil and the ferrite surface

have other found difficulties in signal reduction when placing
ferrites sinlge or multiple in plastic tubes or is it just me?!

best
Paul V Birke PEng

Be a better friend, newshound, and know-it-all with Yahoo! Mobile. Try it now.

159. Re: [ferriterodantennaexperimenters] ferrite rods in plastic tubes

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-13 16:43:50 UTC
From: ehydra
Topic: 155 Message: 159

aimo ruoho schrieb:
> Please, Paul!
> What kind or type of ferrite rods have you used?
> How many turns and which type and thickness of wire have you used?
> From where have you got those rods?
> Aimo

For frequencies below 2MHz you can use Litz wire for optium performance. Between 2MHz and 10MHz it is better to use thick copper wire, approx. 0.5mm diameter. Space the windings equality with interwinding space of the same value. Locate the coil in the middle 1/3 space of the rod. For optimum performance the coil should be 1/4 to 1/3 of the length of the rod.

The turns depend on ui of the rod and the loading capacitor. For 100kHz use 1000 turns, for 1 to 10MHz for in the range of 15 turns.

Depedending of technical quality of your work a Q of 1000 should be possible. For very low frequency (below 10kHz) it should be possible to 10.000.

>
> Paul V Birke PEng <nonlinear@...> wrote:
> I have found it better to wind directly on a ferrite rod so as to
> obtain maximum signal transfer say at 1 to 10 MHz
>
> when rods are bundled, they are sometimes placed in pcv tubes
>
> this creates a space of 1/16" to 1/8" of air MUr=1.0 between the
> driving coil and the ferrite surface

The only important thing is the diameter of the ferrite rod itself! All other area around will not radiate/receive. A tube around will increase wire length of the coil and that reduces Q by increased ohmic resistance.

You can use FEMM to see the magentic flux of your construction. Very interesting!

>
> have other found difficulties in signal reduction when placing
> ferrites sinlge or multiple in plastic tubes or is it just me?!
>

A usable plastic material will not warm up in the microwave oven. This very simple test is suffice!
PVC itself is not very standardized. Most PVC is of bad quality and will dissipate rf. If the plastic material can assimilate water vapour the thing gettin worse.

A better material is the red plastic installation tubes.

I can offer high-quality ferrite rods. See my last posting here.

- Henry

160. great ferrite rods for sale 17cmx10mm

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-13 17:01:16 UTC
From: ehydra
Topic: 160 Message: 160

Here is a copy of the mentioned post:

Hi low-frequency folks -

I managed to get a big lot of rods.

So I can give away a bunch of ferrite rods for experimenting. Great as antenna for up to 10MHz or as a wideband transformer. If you can accept a sightly reduced effective ui you can bundle them together.

quick technical data:
manufacturer: Philips
material: 3B1
ui: 900
curie temerature: 150?C
length: 170mm
diameter: 10mm
outline: rod with six cuts (Improves Q of wound coil!)

Price: Euro 18,-

Here is more info:
http://www.ehydra.dyndns.info/temp_ferrite/

And I sell LCD 2x10 with i2c serial bus connection AND backlight: Euro 13,-
It is entirely shielded in tin metal and approx. 55x30mm outline. See photo here: http://www.ehydra.dyndns.info/temp_ferrite/

Shippping is from Germany. You can pay with PayPal (ehydra@...) or bank account transfer. I cannot offer insurance for money sent by snail mail.
Shipping costs (insured) in Germany is Euro 6,-. Other countries please ask or suggest a useful carrier.

Hope this helps. Just ask if you need further info.

regards -
Henry Kiefer

161. Re: [ferriterodantennaexperimenters] great ferrite rods for sale 17cmx10mm

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-13 19:24:23 UTC
From: jpopelish@rica.net
Topic: 160 Message: 161

```
----- Original Message Follows -----
From: ehydra <ehydra@...>
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: [ferriterodantennaexperimenters] great ferrite rods
for sale 17cmx10mm
Date: Wed, 13 Feb 2008 18:01:16 +0100

>Here is a copy of the mentioned post:
>
>
>Hi low-frequency folks -
>
>
>I managed to get a big lot of rods.
>
>So I can give away a bunch of ferrite rods for
>experimenting. Great as antenna for up to 10MHz or as a
>wideband transformer. If you can accept a sightly reduced
>effective ui you can bundle them together.
>
>quick technical data:
>manufacturer: Philips
>material: 3B1
>ui: 900
>curie temerature: 150°C
>length: 170mm
>diameter: 10mm
>outline: rod with six cuts (Improves Q of wound coil!)
>
>Price: Euro 18,-
>
>Here is more info:
>http://www.ehydra.dyndns.info/temp_ferrite/
>
>
>And I sell LCD 2x10 with i2c serial bus connection AND
>backlight: Euro 13,- It is entirely shielded in tin metal
>and approx. 55x30mm outline. See photo here:
>http://www.ehydra.dyndns.info/temp_ferrite/
>
>
>Shippping is from Germany. You can pay with PayPal
>(ehydra@...) or bank account transfer. I cannot offer
>insurance for money sent by snail mail.
>Shipping costs (insured) in Germany is Euro 6,-. Other
```

>countries please ask or suggest a useful carrier.
>
>
>Hope this helps. Just ask if you need further info.
>
>
>regards -
>Henry Kiefer

Henry, do you have access to a data sheet for these rods,
from the manufacturer?
Did you buy these from the manufacturer, from a distributor,
or from someone else?

The reason I ask is that I have seen rods in that form made
only of power materials (high Bsat, high curie temperature,
moderate frequency capability).

So I am concerned with your paper trail back to the maker,
and that the rods are made of the material you think they
are made of.

--
Regards,

John Popelish

162. Re: [ferriterodantennaexperimenters] great ferrite rods for sale 17cmx10mm

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-14 02:51:05 UTC
From: ehydra
Topic: 160 Message: 162

Hi John -

>
> Henry, do you have access to a data sheet for these rods,
> from the manufacturer?
> Did you buy these from the manufacturer, from a distributor,
> or from someone else?

New parts from a closed electronic manufacturer.

>
> The reason I ask is that I have seen rods in that form made
> only of power materials (high Bsat, high curie temperature,
> moderate frequency capability).

It is a MnZn type. If you follow my link there is the datasheet of the
material:
http://www.ehydra.dyndns.info/temp_ferrite/

As you already know the ui is measured on a toroid target.
MnZn have higher conductivity than NiZn, but lower capacitance.

>
> So I am concerned with your paper trail back to the maker,
> and that the rods are made of the material you think they
> are made of.
>

I'm pretty sure but cannot take my hand in the fire.

What do you want I should do. Something to measure?

regards -
Henry

jpopelish@... schrieb:
> ----- Original Message Follows -----
> From: ehydra <ehydra@...>
> To: ferriterodantennaexperimenters@yahoogroups.com
> Subject: [ferriterodantennaexperimenters] great ferrite rods
> for sale 17cmx10mm
> Date: Wed, 13 Feb 2008 18:01:16 +0100
>
>> Here is a copy of the mentioned post:
>>
>>
>> Hi low-frequency folks -

>>
>>
>> I managed to get a big lot of rods.
>>
>> So I can give away a bunch of ferrite rods for
>> experimenting. Great as antenna for up to 10MHz or as a
>> wideband transformer. If you can accept a sightly reduced
>> effective ui you can bundle them together.
>>
>> quick technical data:
>> manufacturer: Philips
>> material: 3B1
>> ui: 900
>> curie temerature: 150?C
>> length: 170mm
>> diameter: 10mm
>> outline: rod with six cuts (Improves Q of wound coil!)
>>
>> Price: Euro 18,-
>>
>> Here is more info:
>> http://www.ehydra.dyndns.info/temp_ferrite/
>>
>>
>> And I sell LCD 2x10 with i2c serial bus connection AND
>> backlight: Euro 13,- It is entirely shielded in tin metal
>> and approx. 55x30mm outline. See photo here:
>> http://www.ehydra.dyndns.info/temp_ferrite/
>>
>>
>> Shippping is from Germany. You can pay with PayPal
>> (ehydra@...) or bank account transfer. I cannot offer
>> insurance for money sent by snail mail.
>> Shipping costs (insured) in Germany is Euro 6,-. Other
>> countries please ask or suggest a useful carrier.
>>
>>
>> Hope this helps. Just ask if you need further info.

163. Re: [ferriterodantennaexperimenters] great ferrite rods for sale 17cmx10mm

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-14 03:14:32 UTC
From: John Popelish
Topic: 160 Message: 163

ehydra wrote:
> Hi John -
>
>> Henry, do you have access to a data sheet for these rods,
>> from the manufacturer?
>> Did you buy these from the manufacturer, from a distributor,
>> or from someone else?
>
> New parts from a closed electronic manufacturer.
>
>
>> The reason I ask is that I have seen rods in that form made
>> only of power materials (high Bsat, high curie temperature,
>> moderate frequency capability).
>
> It is a MnZn type. If you follow my link there is the datasheet of the
> material:
> http://www.ehydra.dyndns.info/temp_ferrite/
>
> As you already know the ui is measured on a toroid target.
> MnZn have higher conductivity than NiZn, but lower capacitance.
>
>> So I am concerned with your paper trail back to the maker,
>> and that the rods are made of the material you think they
>> are made of.
>>
>
> I'm pretty sure but cannot take my hand in the fire.
>
> What do you want I should do. Something to measure?

I just wondered how well documented the material in the rods
was. Were you told the rods were made of type 3B1 or did
you see a data sheet that described the rod and included
that information. I admit that I have seen an antenna made
with that rod form, before, but have never come across any
manufacturer who made them with that intended purpose.

Are the rods conductive enough that you can measure a
resistance with two contacts made with an ohm meter? If so,
that would pretty well verify that they are not RF material,
but sub 1MHz power material. Still quite useful for antenna
uses. I have seen several manufacturers who make this form
for use in directing the welding current when making welded
tubing. In this application they are called impeders. In

that application, the slots are used to pass coolant that keeps the ferrite below curie temperature while inside a pipe that is being heated to melting temperature a few millimeters away.

Here are some links to that sort of thing.

http://www.rell.co.kr/board/data/relldata/1047800574/pipemaker_guide.pdf
http://www.ferroxcube.com/appl/info/impeders.pdf
http://www.continuouscoil.com/tubemill_ferrite.asp
http://www.tdk-ninebig.com.tw/E026.PDF
http://www.imag.ind.br/sold1.htm

I agree that it is relatively difficult to fully characterize the material in rod form, rather than in toroid form. That is why a paper trail is so useful.

--
Regards,

John Popelish

164. ferrite antenna schematics

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-14 12:49:33 UTC
From: biometuy
Topic: 164 Message: 164

Colleagues:

Can anyone have a schematics for the follwing:

Ramsey Magnet antenna
SW ferrite stick antenna up to 12 mhz

Can share with me?

I live in a 10 floor building and I dont have possibilities to put an external antenna, thats why Im looking an alternative.

Thanks in advance

Jorge Morales Mello
Montevideo - Uruguay

165. Re: [ferriterody antennaexperimenters] ferrite rods in plastic tubes

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-13 06:45:00 UTC
From: Paul V Birke PEng
Topic: 165 Message: 165

I got some russian rods from moscow of the shortwave type

forget the designation they were however not the mw ones but special ones

they do not appear on the market that often

p

----- Original Message ----
From: aimo ruoho <aimounto@...>
To: ferriterodantennaexperimenters@yahoogroups.com
Sent: Monday, February 11, 2008 5:41:35 PM
Subject: Re: [ferriterodantennaexperimenters] ferrite rods in plastic tubes

Please, Paul!
What kind or type of ferrite rods have you used?
How many turns and which type and thickness of wire have you used?
From where have you got those rods?
Aimo

Paul V Birke PEng <nonlinear@rogers. com> wrote:
I have found it better to wind directly on a ferrite rod so as to
obtain maximum signal transfer say at 1 to 10 MHz

when rods are bundled, they are sometimes placed in pcv tubes

this creates a space of 1/16" to 1/8" of air MUr=1.0 between the
driving coil and
the ferrite surface

have other found difficulties in signal reduction when placing
ferrites sinlge or multiple in plastic tubes or is it just me?!

best
Paul V Birke PEng

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know-it-all with Yahoo! Mobile. Try it now.

<!--

#ygrp-mkp{
border:1px solid #d8d8d8;font-family:Arial;margin:14px 0px;padding:0px 14px;}
#ygrp-mkp hr{
border:1px solid #d8d8d8;}
#ygrp-mkp #hd{
color:#628c2a;font-size:85%;font-weight:bold;line-height:122%;margin:10px 0px;}
#ygrp-mkp #ads{

```
margin-bottom:10px;}
#ygrp-mkp .ad{
padding:0 0;}
#ygrp-mkp .ad a{
color:#0000ff;text-decoration:none;}
-->

<!--

#ygrp-sponsor #ygrp-lc{
font-family:Arial;}
#ygrp-sponsor #ygrp-lc #hd{
margin:10px 0px;font-weight:bold;font-size:78%;line-height:122%;}
#ygrp-sponsor #ygrp-lc .ad{
margin-bottom:10px;padding:0 0;}
-->

<!--

#ygrp-mlmsg {font-size:13px;font-family:arial, helvetica, clean, sans-serif;}
#ygrp-mlmsg table {font-size:inherit;font:100%;}
#ygrp-mlmsg select, input, textarea {font:99% arial, helvetica, clean, sans-serif;}
#ygrp-mlmsg pre, code {font:115% monospace;}
#ygrp-mlmsg * {line-height:1.22em;}
#ygrp-text{
font-family:Georgia;
}
#ygrp-text p{
margin:0 0 1em 0;}
#ygrp-tpmsgs{
font-family:Arial;
clear:both;}
#ygrp-vitnav{
padding-top:10px;font-family:Verdana;font-size:77%;margin:0;}
#ygrp-vitnav a{
padding:0 1px;}
#ygrp-actbar{
clear:both;margin:25px 0;white-space:nowrap;color:#666;text-align:right;}
#ygrp-actbar .left{
float:left;white-space:nowrap;}
.bld{font-weight:bold;}
#ygrp-grft{
font-family:Verdana;font-size:77%;padding:15px 0;}
#ygrp-ft{
font-family:verdana;font-size:77%;border-top:1px solid #666;
padding:5px 0;
}
#ygrp-mlmsg #logo{
padding-bottom:10px;}
```

```
#ygrp-vital{
background-color:#e0ecee;margin-bottom:20px;padding:2px 0 8px 8px;}
#ygrp-vital #vithd{
font-size:77%;font-family:Verdana;font-weight:bold;color:#333;text-transform:uppercase;}
#ygrp-vital ul{
padding:0;margin:2px 0;}
#ygrp-vital ul li{
list-style-type:none;clear:both;border:1px solid #e0ecee;
}
#ygrp-vital ul li .ct{
font-weight:bold;color:#ff7900;float:right;width:2em;text-align:right;padding-right:.5em;}
#ygrp-vital ul li .cat{
font-weight:bold;}
#ygrp-vital a{
text-decoration:none;}

#ygrp-vital a:hover{
text-decoration:underline;}

#ygrp-sponsor #hd{
color:#999;font-size:77%;}
#ygrp-sponsor #ov{
padding:6px 13px;background-color:#e0ecee;margin-bottom:20px;}
#ygrp-sponsor #ov ul{
padding:0 0 0 8px;margin:0;}
#ygrp-sponsor #ov li{
list-style-type:square;padding:6px 0;font-size:77%;}
#ygrp-sponsor #ov li a{
text-decoration:none;font-size:130%;}
#ygrp-sponsor #nc{
background-color:#eee;margin-bottom:20px;padding:0 8px;}
#ygrp-sponsor .ad{
padding:8px 0;}
#ygrp-sponsor .ad #hd1{
font-family:Arial;font-weight:bold;color:#628c2a;font-size:100%;line-height:122%;}
#ygrp-sponsor .ad a{
text-decoration:none;}
#ygrp-sponsor .ad a:hover{
text-decoration:underline;}
#ygrp-sponsor .ad p{
margin:0;}
o{font-size:0;}
.MsoNormal{
margin:0 0 0 0;}
#ygrp-text tt{
font-size:120%;}
blockquote{margin:0 0 0 4px;}
.replbq{margin:4;}
-->
```

166. Re: [ferriterodantennaexperimenters] great ferrite rods for sale 17cmx10mm

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-13 23:27:28 UTC
From: aimo ruoho
Topic: 160 Message: 166

Those ferrite rods must be extraordinary good, because they cost so much!

jpopelish@... wrote:
----- Original Message Follows -----
From: ehydra
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: [ferriterodantennaexperimenters] great ferrite rods
for sale 17cmx10mm
Date: Wed, 13 Feb 2008 18:01:16 +0100

>Here is a copy of the mentioned post:
>
>
>Hi low-frequency folks -
>
>
>I managed to get a big lot of rods.
>
>So I can give away a bunch of ferrite rods for
>experimenting. Great as antenna for up to 10MHz or as a
>wideband transformer. If you can accept a sightly reduced
>effective ui you can bundle them together.
>
>quick technical data:
>manufacturer: Philips
>material: 3B1
>ui: 900
>curie temerature: 150?C
>length: 170mm
>diameter: 10mm
>outline: rod with six cuts (Improves Q of wound coil!)
>
>Price: Euro 18,-
>
>Here is more info:
>http://www.ehydra.dyndns.info/temp_ferrite/
>
>
>And I sell LCD 2x10 with i2c serial bus connection AND
>backlight: Euro 13,- It is entirely shielded in tin metal
>and approx. 55x30mm outline. See photo here:
>http://www.ehydra.dyndns.info/temp_ferrite/
>
>
>Shippping is from Germany. You can pay with PayPal

>(ehydra@...) or bank account transfer. I cannot offer
>insurance for money sent by snail mail.
>Shipping costs (insured) in Germany is Euro 6,-. Other
>countries please ask or suggest a useful carrier.
>
>
>Hope this helps. Just ask if you need further info.
>
>
>regards -
>Henry Kiefer

Henry, do you have access to a data sheet for these rods,
from the manufacturer?
Did you buy these from the manufacturer, from a distributor,
or from someone else?

The reason I ask is that I have seen rods in that form made
only of power materials (high Bsat, high curie temperature,
moderate frequency capability).

So I am concerned with your paper trail back to the maker,
and that the rods are made of the material you think they
are made of.

--
Regards,

John Popelish

Yahoo! Groups Links

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167. Re: [ferriterodantennaexperimenters] great ferrite rods for sale 17cmx10mm

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-14 22:52:23 UTC
From: ehydra
Topic: 160 Message: 167

Hi John -

>> What do you want I should do. Something to measure?
>
> I just wondered how well documented the material in the rods
> was. Were you told the rods were made of type 3B1 or did
> you see a data sheet that described the rod and included
> that information. I admit that I have seen an antenna made
> with that rod form, before, but have never come across any
> manufacturer who made them with that intended purpose.
>

I don't know why it should not work?
Can you provide the link to the mentioned manufacturer?

For an antenna app I think the only important thing is to stay below the characteristic impedance peak. After there the ferrite is working as suppression bead.

I was told that the rod is of 3B1. I don't have a possibility to check this other than I can use it as an antenna rod to compare ith with other rods I have.

> Are the rods conductive enough that you can measure a
> resistance with two contacts made with an ohm meter? If so,
> that would pretty well verify that they are not RF material,
> but sub 1MHz power material. Still quite useful for antenna
> uses. I have seen several manufacturers who make this form
> for use in directing the welding current when making welded
> tubing. In this application they are called impeders. In
> that application, the slots are used to pass coolant that
> keeps the ferrite below curie temperature while inside a
> pipe that is being heated to melting temperature a few
> millimeters away.

I will check this if I have received them. They're on the way.
The outline is that of an impeder. The material can work in different functional areas.

The days where ferrite antennas were a high-tech product of on-the-edge companies like Philips(Valvo) are long gone. Production still exists but for niche markets. Or some cheap production in china and india for cheapest trash radios.

>
> Here are some links to that sort of thing.
>

> http://www.rell.co.kr/board/data/relldata/1047800574/pipemaker_guide.pdf
> http://www.ferroxcube.com/appl/info/impeders.pdf
> http://www.continuouscoil.com/tubemill_ferrite.asp
> http://www.tdk-ninebig.com.tw/E026.PDF
> http://www.imag.ind.br/sold1.htm
>

Oh interesting. Seems you have a big database of ferrite links ;-)

> I agree that it is relatively difficult to fully
> characterize the material in rod form, rather than in toroid
> form. That is why a paper trail is so useful.
>

Maybe the package will include some form of Ferroxcube paper sheet.

As of 3B1: Should be good working for frequencies up to 1MHz. For other reasons 1MHz is still 'the best frequency' compromise. Our grandpas knew that in the ancient time when they implemented mw radio infrastructure.

regards -
Henry

168. Re: [ferriterodantennaexperimenters] great ferrite rods for sale 17cmx10mm

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-15 05:06:12 UTC
From: John Popelish
Topic: 160 Message: 168

ehydra wrote:
> John Popelish wrote:

>> ...I admit that I have seen an antenna made
>> with that rod form, before, but have never come across any
>> manufacturer who made them with that intended purpose.
>>
>
> I don't know why it should not work?
> Can you provide the link to the mentioned manufacturer?

Sorry, no. Another member of this group sent me a picture
of a radio with a fluted (slotted) rod antenna), but I know
nothing else about it.

> For an antenna app I think the only important thing is to stay below the
> characteristic impedance peak. After there the ferrite is working as
> suppression bead.

I agree. The hard part is characterizing the material if
you have only an unidentified rod. I have an antique Q
meter that I use to test rods over a wide range of
frequency, with a small coil in the center of the rod, to
find out at what frequency the rod starts to have high
losses. The Q meter is older than I am:
http://www.hp.com/hpinfo/abouthp/histnfacts/museum/earlyinstruments/0010/index.html
The Files section of the group web page as some of my
results in a folder named Popelish.

> I was told that the rod is of 3B1. I don't have a possibility to check
> this other than I can use it as an antenna rod to compare ith with other
> rods I have.
(snip)
>> http://www.rell.co.kr/board/data/relldata/1047800574/pipemaker_guide.pdf
>> http://www.ferroxcube.com/appl/info/impeders.pdf
>> http://www.continuouscoil.com/tubemill_ferrite.asp
>> http://www.tdk-ninebig.com.tw/E026.PDF
>> http://www.imag.ind.br/sold1.htm

> Oh interesting. Seems you have a big database of ferrite links ;-)

I spent about an hour finding those for you.

(snip)
> Maybe the package will include some form of Ferroxcube paper sheet.

That would be very helpful.

> As of 3B1: Should be good working for frequencies up to 1MHz. For other
> reasons 1MHz is still 'the best frequency' compromise. Our grandpas knew
> that in the ancient time when they implemented mw radio infrastructure.

I see lots of ferrite for sale where either the seller has
no idea what they are selling, or they guess and tell me it
is something they hope I want. I hope you have gotten what
you were sold, or find a good use for what you have gotten.

--
Regards,

John Popelish

169. Re: [ferriterodantennaexperimenters] Re: [ferriterody antennaexperimenters] ferrite rods in plastic tubes

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-15 19:22:47 UTC
From: aimo ruoho
Topic: 165 Message: 169

Paul, thanks for info!
Would you like to tell me , how to have contact with this Moscow man?
I'd like to buy some ferrite rods suitable for SW, too.
73, Aimo

Paul V Birke PEng <nonlinear@...> wrote:
I got some russian rods from moscow of the shortwave type

forget the designation they were however not the mw ones but special ones

they do not appear on the market that often

p

----- Original Message ----
From: aimo ruoho <aimounto@...>
To: ferriterodantennaexperimenters@yahoogroups.com
Sent: Monday, February 11, 2008 5:41:35 PM
Subject: Re: [ferriterodantennaexperimenters] ferrite rods in plastic tubes

Please, Paul!
What kind or type of ferrite rods have you used?
How many turns and which type and thickness of wire have you used?
From where have you got those rods?
Aimo

Paul V Birke PEng <nonlinear@rogers. com> wrote:
I have found it better to wind directly on a ferrite rod so as to
obtain maximum signal transfer say at 1 to 10 MHz

when rods are bundled, they are sometimes placed in pcv tubes

this creates a space of 1/16" to 1/8" of air MUr=1.0 between the
driving coil and the ferrite surface

have other found difficulties in signal reduction when placing
ferrites sinlge or multiple in plastic tubes or is it just me?!

best
Paul V Birke PEng

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Be a better friend, newshound, and know-it-all with Yahoo! Mobile. Try it now.

170. Re: [ferriterodantennaexperimenters] great ferrite rods for sale 17cmx10mm

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-14 16:58:36 UTC
From: Paul V Birke PEng
Topic: 160 Message: 170

Dear Aimo

certainly here in Canada 30$ per rod it better be more than excellent !!

best wishes
Paul

----- Original Message ----
From: aimo ruoho <aimounto@...>
To: ferriterodantennaexperimenters@yahoogroups.com
Sent: Wednesday, February 13, 2008 6:27:28 PM
Subject: Re: [ferriterodantennaexperimenters] great ferrite rods for sale 17cmx10mm

Those ferrite rods must be extraordinary good, because they cost so much!

jpopelish@rica. net wrote:

----- Original Message Follows -----
From: ehydra
To: ferriterodantennaex perimenters@ yahoogroups. com
Subject: [ferriterodantennae xperimenters] great ferrite rods
for sale 17cmx10mm
Date: Wed, 13 Feb 2008 18:01:16 +0100

>Here is a copy of the mentioned post:
>
>
>Hi low-frequency folks -
>
>
>I managed to get a big lot of rods.
>
>So I can give away a bunch of ferrite rods for
>experimenting. Great as antenna for up to 10MHz or as a
>wideband transformer. If you can accept a sightly reduced
>effective ui you can bundle them together.
>
>quick technical data:
>manufacturer: Philips
>material: 3B1
>ui:
900
>curie temerature: 150°C
>length: 170mm
>diameter: 10mm
>outline: rod with six cuts (Improves Q of wound coil!)
>

>Price: Euro 18,-
>
>Here is more info:
>http://www.ehydra. dyndns.info/ temp_ferrite/
>
>
>And I sell LCD 2x10 with i2c serial bus connection AND
>backlight: Euro 13,- It is entirely shielded in tin metal
>and approx. 55x30mm outline. See photo here:
>http://www.ehydra. dyndns.info/ temp_ferrite/
>
>
>Shippping is from Germany. You can pay with PayPal
>(ehydra@arcor. de) or bank account transfer. I cannot offer
>insurance for money sent by snail mail.
>Shipping costs (insured) in Germany is Euro 6,-. Other
>countries please ask or suggest a useful carrier.
>
>
>Hope this helps. Just ask if you need further info.
>
>
>regards -
>Henry Kiefer

Henry, do you have access to a data sheet
for these rods,
from the manufacturer?
Did you buy these from the manufacturer, from a distributor,
or from someone else?

The reason I ask is that I have seen rods in that form made
only of power materials (high Bsat, high curie temperature,
moderate frequency capability).

So I am concerned with your paper trail back to the maker,
and that the rods are made of the material you think they
are made of.

--
Regards,

John Popelish

Yahoo! Groups Links

mailto:ferriterodan tennaexperimente rs-fullfeatured@ yahoogroups. com

Be a better friend, newshound, and
know-it-all with Yahoo! Mobile. Try it now.

<!--

```
#ygrp-mkp{
border:1px solid #d8d8d8;font-family:Arial;margin:14px 0px;padding:0px 14px;}
#ygrp-mkp hr{
border:1px solid #d8d8d8;}
#ygrp-mkp #hd{
color:#628c2a;font-size:85%;font-weight:bold;line-height:122%;margin:10px 0px;}
#ygrp-mkp #ads{
margin-bottom:10px;}
#ygrp-mkp .ad{
padding:0 0;}
#ygrp-mkp .ad a{
color:#0000ff;text-decoration:none;}
-->

<!--

#ygrp-sponsor #ygrp-lc{
font-family:Arial;}
#ygrp-sponsor #ygrp-lc #hd{
margin:10px 0px;font-weight:bold;font-size:78%;line-height:122%;}
#ygrp-sponsor #ygrp-lc .ad{
margin-bottom:10px;padding:0 0;}
-->

<!--

#ygrp-mlmsg {font-size:13px;font-family:arial, helvetica, clean, sans-serif;}
#ygrp-mlmsg table {font-size:inherit;font:100%;}
#ygrp-mlmsg select, input, textarea {font:99% arial, helvetica, clean, sans-serif;}
#ygrp-mlmsg pre, code {font:115% monospace;}
#ygrp-mlmsg * {line-height:1.22em;}
#ygrp-text{
font-family:Georgia;
}
#ygrp-text p{
margin:0 0 1em 0;}
#ygrp-tpmsgs{
font-family:Arial;
clear:both;}
#ygrp-vitnav{
padding-top:10px;font-family:Verdana;font-size:77%;margin:0;}
#ygrp-vitnav a{
padding:0 1px;}
#ygrp-actbar{
clear:both;margin:25px 0;white-space:nowrap;color:#666;text-align:right;}
#ygrp-actbar .left{
float:left;white-space:nowrap;}
.bld{font-weight:bold;}
#ygrp-grft{
font-family:Verdana;font-size:77%;padding:15px 0;}
#ygrp-ft{
font-family:verdana;font-size:77%;border-top:1px solid #666;
```

```
padding:5px 0;
}
#ygrp-mlmsg #logo{
padding-bottom:10px;}

#ygrp-vital{
background-color:#e0ecee;margin-bottom:20px;padding:2px 0 8px 8px;}
#ygrp-vital #vithd{
font-size:77%;font-family:Verdana;font-weight:bold;color:#333;text-transform:uppercase;}
#ygrp-vital ul{
padding:0;margin:2px 0;}
#ygrp-vital ul li{
list-style-type:none;clear:both;border:1px solid #e0ecee;
}
#ygrp-vital ul li .ct{
font-weight:bold;color:#ff7900;float:right;width:2em;text-align:right;padding-right:.5em;}
#ygrp-vital ul li .cat{
font-weight:bold;}
#ygrp-vital a{
text-decoration:none;}

#ygrp-vital a:hover{
text-decoration:underline;}

#ygrp-sponsor #hd{
color:#999;font-size:77%;}
#ygrp-sponsor #ov{
padding:6px 13px;background-color:#e0ecee;margin-bottom:20px;}
#ygrp-sponsor #ov ul{
padding:0 0 0 8px;margin:0;}
#ygrp-sponsor #ov li{
list-style-type:square;padding:6px 0;font-size:77%;}
#ygrp-sponsor #ov li a{
text-decoration:none;font-size:130%;}
#ygrp-sponsor #nc{
background-color:#eee;margin-bottom:20px;padding:0 8px;}
#ygrp-sponsor .ad{
padding:8px 0;}
#ygrp-sponsor .ad #hd1{
font-family:Arial;font-weight:bold;color:#628c2a;font-size:100%;line-height:122%;}
#ygrp-sponsor .ad a{
text-decoration:none;}
#ygrp-sponsor .ad a:hover{
text-decoration:underline;}
#ygrp-sponsor .ad p{
margin:0;}
o{font-size:0;}
.MsoNormal{
margin:0 0 0 0;}
#ygrp-text tt{
font-size:120%;}
```

```
blockquote{margin:0 0 0 4px;}
.replbq{margin:4;}
-->
```

171. Re: [ferriterodantennaexperimenters] great ferrite rods for sale 17cmx10mm

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-16 16:54:57 UTC
From: ehydra
Topic: 160 Message: 171

Hello Paul -

Suggest a price and we see...

- Henry

Paul V Birke PEng schrieb:
> Dear Aimo
>
> certainly here in Canada 30$ per rod it better be more than excellent !!
>
> best wishes
> Paul
>
> ----- Original Message ----
> From: aimo ruoho <aimounto@...>
> To: ferriterodantennaexperimenters@yahoogroups.com
> Sent: Wednesday, February 13, 2008 6:27:28 PM
> Subject: Re: [ferriterodantennaexperimenters] great ferrite rods for sale 17cmx10mm
>
>
>
>
>
>
>
>
>
>
>
>
>
> Those ferrite rods must be extraordinary good, because they cost so much!
>
> jpopelish@rica. net wrote:
>
> ----- Original Message Follows -----
> From: ehydra
> To: ferriterodantennaex perimenters@ yahoogroups. com
> Subject: [ferriterodantennae xperimenters] great ferrite rods
> for sale 17cmx10mm
> Date: Wed, 13 Feb 2008 18:01:16 +0100
>
>> Here is a copy of the mentioned post:
>>
>>

>> Hi low-frequency folks -
>>
>>
>> I managed to get a big lot of rods.
>>
>> So I can give away a bunch of ferrite rods for
>> experimenting. Great as antenna for up to 10MHz or as a
>> wideband transformer. If you can accept a sightly reduced
>> effective ui you can bundle them together.
>>
>> quick technical data:
>> manufacturer: Philips
>> material: 3B1
>> ui:
> 900
>> curie temerature: 150?C
>> length: 170mm
>> diameter: 10mm
>> outline: rod with six cuts (Improves Q of wound coil!)
>>
>> Price: Euro 18,-
>>
>> Here is more info:
>> http://www.ehydra. dyndns.info/ temp_ferrite/
>>
>>
>> And I sell LCD 2x10 with i2c serial bus connection AND
>> backlight: Euro 13,- It is entirely shielded in tin metal
>> and approx. 55x30mm outline. See photo here:
>> http://www.ehydra. dyndns.info/ temp_ferrite/
>>
>>
>> Shippping is from Germany. You can pay with PayPal
>> (ehydra@arcor. de) or bank account transfer. I cannot offer
>> insurance for money sent by snail mail.
>> Shipping costs (insured) in Germany is Euro 6,-. Other
>> countries please ask or suggest a useful carrier.
>>
>>
>> Hope this helps. Just ask if you need further info.
>>
>>
>> regards -
>> Henry Kiefer
>
> Henry, do you have access to a data sheet
> for these rods,
> from the manufacturer?
> Did you buy these from the manufacturer, from a distributor,
> or from someone else?

>
> The reason I ask is that I have seen rods in that form made
> only of power materials (high Bsat, high curie temperature,
> moderate frequency capability).
>
> So I am concerned with your paper trail back to the maker,
> and that the rods are made of the material you think they
> are made of.
>

172. Re: [ferriterodantennaexperimenters] great ferrite rods for sale 17cmx10mm

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-16 17:03:19 UTC
From: ehydra
Topic: 160 Message: 172

```
>>> ...I admit that I have seen an antenna made
>>> with that rod form, before, but have never come across any
>>> manufacturer who made them with that intended purpose.
>>>

Most important parameter is rod volume. Somewhere I read about an
ferrite antenna in a helicopter of really big size. I think it was an
CH-53. Maybe 500kg or so.
They stated it worked great even as an transmitter antenna.
But the weight...

>> I don't know why it should not work?
>> Can you provide the link to the mentioned manufacturer?
>
> Sorry, no. Another member of this group sent me a picture
> of a radio with a fluted (slotted) rod antenna), but I know
> nothing else about it.

OK.

>
>> For an antenna app I think the only important thing is to stay below the
>> characteristic impedance peak. After there the ferrite is working as
>> suppression bead.
>
> I agree. The hard part is characterizing the material if
> you have only an unidentified rod. I have an antique Q
> meter that I use to test rods over a wide range of
> frequency, with a small coil in the center of the rod, to
> find out at what frequency the rod starts to have high
> losses. The Q meter is older than I am:
> http://www.hp.com/hpinfo/abouthp/histnfacts/museum/earlyinstruments/0010/index.html
> The Files section of the group web page as some of my
> results in a folder named Popelish.
>

Yeah. That is really old. You should add an USB port ;-)

>> I was told that the rod is of 3B1. I don't have a possibility to check
>> this other than I can use it as an antenna rod to compare ith with other
>> rods I have.
> (snip)
>>> http://www.rell.co.kr/board/data/relldata/1047800574/pipemaker_guide.pdf
>>> http://www.ferroxcube.com/appl/info/impeders.pdf
>>> http://www.continuouscoil.com/tubemill_ferrite.asp
>>> http://www.tdk-ninebig.com.tw/E026.PDF
```

>>> http://www.imag.ind.br/sold1.htm
>
>> Oh interesting. Seems you have a big database of ferrite links ;-)
>
> I spent about an hour finding those for you.
>

Sorry for that. I think other than for hobby or very very special apps
the ferrite rod technology is outdated. That was a great technology in a
time where transistors had a very low f(t). You can have a BFP620 for a
dollar having ft(t) of 60GHz!

>> Maybe the package will include some form of Ferroxcube paper sheet.
>
> That would be very helpful.
>
>> As of 3B1: Should be good working for frequencies up to 1MHz. For other
>> reasons 1MHz is still 'the best frequency' compromise. Our grandpas knew
>> that in the ancient time when they implemented mw radio infrastructure.
>
> I see lots of ferrite for sale where either the seller has
> no idea what they are selling, or they guess and tell me it
> is something they hope I want. I hope you have gotten what
> you were sold, or find a good use for what you have gotten.
>

I will see and respond to you.

regards -
Henry

173. Active Ferrite Rod Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-17 17:02:44 UTC
From: Chris Trask
Topic: 173 Message: 173

I just completed work on an active ferrite rod antenna with remote tuning. It has a tuning Q of about 75 at 10MHz. The details are in:

http://www.home.earthlink.net/~christrask/Active Ferrite Rod Antenna.pdf

which can also be obtained using the more convenient:

http://tinyurl.com/ys293g

Chris

```
,----------------------. High Performance Mixers and
/ What's all this \ Amplifiers for RF Communications
/ extinct stuff, anyhow? /
\ _______,--------------' Chris Trask / N7ZWY
_ |/ Principal Engineer
oo\ Sonoran Radio Research
(__)\ _ P.O. Box 25240
\ \ .' `. Tempe, Arizona 85285-5240
\ \ / \
\ '" \ IEEE Senior Member #40274515
. ( ) \
'-| )__| :. \ Email: christrask@...
| | | | \ '. http://www.home.earthlink.net/~christrask
c__; c__; '-..'>.__
```

Graphics by Loek Frederiks

Chris

174. Re: [ferriterodantennaexperimenters] Active Ferrite Rod Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-17 17:15:39 UTC
From: huelbe_garcia@fastimap.com
Topic: 173 Message: 174

Dear Chris,

thank you very much for this new contribution! I really liked this article and others previously published.

You reported it was a 7,5 inches long type 61 ferrite with 200 turns of closely space #4 wire. I wonder what was the inductante of the ferrite-rod antenna. Do you have any thought on this?

Regards,

ZZ3HAG Huelbe
Brazil

----- Original Message -----
From: Chris Trask
To: ferriterodantennaexperimenters@...m
Sent: Sunday, February 17, 2008 2:02 PM
Subject: [ferriterodantennaexperimenters] Active Ferrite Rod Antenna

I just completed work on an active ferrite rod antenna with remote
tuning. It has a tuning Q of about 75 at 10MHz. The details are in:

http://www.home.earthlink.net/~christrask/Active Ferrite Rod Antenna.pdf

which can also be obtained using the more convenient:

http://tinyurl.com/ys293g

Chris

```
,----------------------. High Performance Mixers and
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\ _______,--------------' Chris Trask / N7ZWY
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\ \ / \
\ '" \ IEEE Senior Member #40274515
. ( ) \
'-| )__| :. \ Email: christrask@...
| | | | \ '. http://www.home.earthlink.net/~christrask
c__; c__; '-..'>.__
```

Graphics by Loek Frederiks

Chris

175. Re: [ferriterodantennaexperimenters] Active Ferrite Rod Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-17 17:50:46 UTC
From: Chris Trask
Topic: 173 Message: 175

```
>
> Dear Chris,
>
> thank you very much for this new contribution! I really liked
> this article and others previously published.
>
> You reported it was a 7,5 inches long type 61 ferrite with 200
> turns of closely space #4 wire. I wonder what was the inductante
> of the ferrite-rod antenna. Do you have any thought on this?
>
> Regards,
>
> ZZ3HAG Huelbe
> Brazil
>
```

Using a GR 1650-A bridge (1kHz), it measures at 785 microhenries.

Chris

```
,----------------------. High Performance Mixers and
/ What's all this \ Amplifiers for RF Communications
/ extinct stuff, anyhow? /
\ _______,--------------' Chris Trask / N7ZWY
_ |/ Principal Engineer
oo\ Sonoran Radio Research
(__)\ _ P.O. Box 25240
\ \ .' `. Tempe, Arizona 85285-5240
\ \ / \
\ '" \ IEEE Senior Member #40274515
. ( ) \
'-| )__| :. \ Email: christrask@...
| | | | \ '. http://www.home.earthlink.net/~christrask
c__; c__; '-..'>.__
```

Graphics by Loek Frederiks

176. Re: [ferriterodantennaexperimenters] Active Ferrite Rod Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-17 18:11:57 UTC
From: huelbe_garcia@fastimap.com
Topic: 173 Message: 176

Thank you Chris.

I must be honest: for a moment I thought the parelled inductors (L1+ferrite coil) would sum their inductance. Obviously, this is wrong (the math is the same used with resistors in parallel).

Both inductors (L1 at 3.5uH and the ferrite coil at 785uH) paralled appears have some 3.48uH.

So, I did the math. The circuit has a LC tank with:
L = 3.48uH
C = 2 varactor in series, with total capacitance between 20pF and 250pF aprox

--hg

----- Original Message -----
From: Chris Trask
To: ferriterodantennaexperimenters@yahoogroups.com
Sent: Sunday, February 17, 2008 2:50 PM
Subject: Re: [ferriterodantennaexperimenters] Active Ferrite Rod Antenna
Using a GR 1650-A bridge (1kHz), it measures at 785 microhenries.

Chris

177. Re: [ferriterodantennaexperimenters] Active Ferrite Rod Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-17 18:25:08 UTC
From: Chris Trask
Topic: 173 Message: 177

```
>
> I must be honest: for a moment I thought the parelled inductors
(L1+ferrite
> coil) would sum their inductance. Obviously, this is wrong (the math is
the
> same used with resistors in parallel).
>
> Both inductors (L1 at 3.5uH and the ferrite coil at 785uH) paralled
appears
> have some 3.48uH.
>
> So, I did the math. The circuit has a LC tank with:
> L = 3.48uH
> C = 2 varactor in series, with total capacitance between 20pF and 250pF
> aprox
>

Yes, and remember to add an additional 5pF or so to the capacitance to
account for the JFET gate-to-source plus stray capacitances.

Chris

,----------------------. High Performance Mixers and
/ What's all this \ Amplifiers for RF Communications
/ extinct stuff, anyhow? /
\ _______,--------------' Chris Trask / N7ZWY
_ |/ Principal Engineer
oo\ Sonoran Radio Research
(__)\ _ P.O. Box 25240
\ \ .' `. Tempe, Arizona 85285-5240
\ \ / \
\ '" \ IEEE Senior Member #40274515
. ( ) \
'-| )__| :. \ Email: christrask@...
| | | | \ '. http://www.home.earthlink.net/~christrask
c__; c__; '-..'>.__

Graphics by Loek Frederiks
```

178. Re: [ferriterodantennaexperimenters] Active Ferrite Rod Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-17 18:37:59 UTC
From: huelbe_garcia@fastimap.com
Topic: 173 Message: 178

Hi Chris, thank you for the reply.

I promisse this is my last question :)

Could you please describe how did you wind L1? It seems to have some 25 turns over an 0,5 inch toroid (maybe T50-6?)

--hg

----- Original Message -----
From: Chris Trask
To: ferriterodantennaexperimenters@yahoogroups.com
Sent: Sunday, February 17, 2008 3:25 PM
Subject: Re: [ferriterodantennaexperimenters] Active Ferrite Rod Antenna

>
> I must be honest: for a moment I thought the parelled inductors (L1+ferrite
> coil) would sum their inductance. Obviously, this is wrong (the math is the
> same used with resistors in parallel).
>
> Both inductors (L1 at 3.5uH and the ferrite coil at 785uH) paralled appears
> have some 3.48uH.
>
> So, I did the math. The circuit has a LC tank with:
> L = 3.48uH
> C = 2 varactor in series, with total capacitance between 20pF and 250pF
> aprox
>

Yes, and remember to add an additional 5pF or so to the capacitance to account for the JFET gate-to-source plus stray capacitances.

Chris

```
,----------------------. High Performance Mixers and
/ What's all this \ Amplifiers for RF Communications
/ extinct stuff, anyhow? /
\ _______,--------------' Chris Trask / N7ZWY
_ |/ Principal Engineer
oo\ Sonoran Radio Research
(__)\ _ P.O. Box 25240
\ \ .' `. Tempe, Arizona 85285-5240
\ \ / \
\ '" \ IEEE Senior Member #40274515
```

```
. ( ) \
'-| )__| :. \ Email: christrask@...
| | | | \ '. http://www.home.earthlink.net/~christrask
c__; c__; '-..'>.__
```

Graphics by Loek Frederiks

179. Re: [ferriterodantennaexperimenters] Active Ferrite Rod Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-17 19:13:57 UTC
From: Chris Trask
Topic: 173 Message: 179

```
>
> I promisse this is my last question :)
>
> Could you please describe how did you wind L1? It seems to have some 25
> turns over an 0,5 inch toroid (maybe T50-6?)
>
```

The one in the photo is 25 turns of #26 magnet wire on a T37-6 core, but the one I ended up using was 28 turns of #28 magnet wire on a T37-2 core. That reminds me that I should have taken a more current photo, and perhaps include some information on winding that inductor.

Chris


```
,----------------------. High Performance Mixers and
/ What's all this \ Amplifiers for RF Communications
/ extinct stuff, anyhow? /
\ _______,--------------' Chris Trask / N7ZWY
_ |/ Principal Engineer
oo\ Sonoran Radio Research
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'-| )__| :. \ Email: christrask@...
| | | | \ '. http://www.home.earthlink.net/~christrask
c__; c__; '-..'>.__
```


Graphics by Loek Frederiks

180. Re: [ferriterodantennaexperimenters] great ferrite rods for sale 17cmx10mm

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-16 19:38:45 UTC
From: Paul V Birke PEng
Topic: 160 Message: 180

Hallo Henry

for me I am ok now

but Amio in Spain is looking to buy some good rod

ie good for SW frequencies say up to 15 MHz or more

please contact Aimo
aimounto@yahoo. com

he is retired so you need to be kind to him

best und danke
Paul

ps I could be interested depending upon the information you give John Popelish- a good friend here in NA

----- Original Message ----
From: ehydra <ehydra@...>
To: ferriterodantennaexperimenters@yahoogroups.com
Sent: Saturday, February 16, 2008 11:54:57 AM
Subject: Re: [ferriterodantennaexperimenters] great ferrite rods for sale 17cmx10mm

Hello Paul -

Suggest a price and we see...

- Henry

Paul V Birke PEng schrieb:

> Dear Aimo

>

> certainly here in Canada 30$ per rod it better be more than excellent !!

>

> best wishes

> Paul

>

> ----- Original Message ----

> From: aimo ruoho <aimounto@yahoo. com>

> To: ferriterodantennaex perimenters@ yahoogroups. com

> Sent: Wednesday, February 13, 2008 6:27:28 PM

> Subject: Re: [ferriterodantennae xperimenters] great ferrite rods for sale 17cmx10mm

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>

> Those ferrite rods must be extraordinary good, because they cost so much!

>

> jpopelish@rica. net wrote:

>

> ----- Original Message Follows -----

> From: ehydra

> To: ferriterodantennaex perimenters@ yahoogroups. com

> Subject: [ferriterodantennae xperimenters] great ferrite rods

> for sale 17cmx10mm

> Date: Wed, 13 Feb 2008 18:01:16 +0100

>

>> Here is a copy of the mentioned post:

>>

>>

>> Hi low-frequency folks -

>>

>>

>> I managed to get a big lot of rods.

>>

>> So I can give away a bunch of ferrite rods for

>> experimenting. Great as antenna for up to 10MHz or as a

>> wideband transformer. If you can accept a sightly reduced

>> effective ui you can bundle them together.

>>

>> quick technical data:

>> manufacturer: Philips

>> material: 3B1

>> ui:

> 900

>> curie temerature: 150°C

>> length: 170mm

>> diameter: 10mm

>> outline: rod with six cuts (Improves Q of wound coil!)

>>

>> Price: Euro 18,-

>>

>> Here is more info:

>> http://www.ehydra. dyndns.info/ temp_ferrite/

>>

>>

>> And I sell LCD 2x10 with i2c serial bus connection AND

>> backlight: Euro 13,- It is entirely shielded in tin metal

>> and approx. 55x30mm outline. See photo here:

>> http://www.ehydra. dyndns.info/ temp_ferrite/

>>

>>

>> Shippping is from Germany. You can pay with PayPal

>> (ehydra@arcor. de) or bank account transfer. I cannot offer

>> insurance for money sent by snail mail.

>> Shipping costs (insured) in Germany is Euro 6,-. Other

>> countries please ask or suggest a useful carrier.

>>

>>

>> Hope this helps. Just ask if you need further info.

>>

>>

>> regards -

>> Henry Kiefer

>

> Henry, do you have access to a data sheet

> for these rods,

> from the manufacturer?

> Did you buy these from the manufacturer, from a distributor,

> or from someone else?

>

> The reason I ask is that I have seen rods in that form made

> only of power materials (high Bsat, high curie temperature,

> moderate frequency capability).

>

> So I am concerned with your paper trail back to the maker,

> and that the rods are made of the material you think they

```
> are made of.

>

<!--

#ygrp-mkp{
border:1px solid #d8d8d8;font-family:Arial;margin:14px 0px;padding:0px 14px;}
#ygrp-mkp hr{
border:1px solid #d8d8d8;}
#ygrp-mkp #hd{
color:#628c2a;font-size:85%;font-weight:bold;line-height:122%;margin:10px 0px;}
#ygrp-mkp #ads{
margin-bottom:10px;}
#ygrp-mkp .ad{
padding:0 0;}
#ygrp-mkp .ad a{
color:#0000ff;text-decoration:none;}
-->

<!--

#ygrp-sponsor #ygrp-lc{
font-family:Arial;}
#ygrp-sponsor #ygrp-lc #hd{
margin:10px 0px;font-weight:bold;font-size:78%;line-height:122%;}
#ygrp-sponsor #ygrp-lc .ad{
margin-bottom:10px;padding:0 0;}
-->

<!--

#ygrp-mlmsg {font-size:13px;font-family:arial, helvetica, clean, sans-serif;}
#ygrp-mlmsg table {font-size:inherit;font:100%;}
#ygrp-mlmsg select, input, textarea {font:99% arial, helvetica, clean, sans-serif;}
#ygrp-mlmsg pre, code {font:115% monospace;}
#ygrp-mlmsg * {line-height:1.22em;}
#ygrp-text{
font-family:Georgia;
}
#ygrp-text p{
margin:0 0 1em 0;}
#ygrp-tpmsgs{
font-family:Arial;
clear:both;}
#ygrp-vitnav{
padding-top:10px;font-family:Verdana;font-size:77%;margin:0;}
#ygrp-vitnav a{
padding:0 1px;}
#ygrp-actbar{
clear:both;margin:25px 0;white-space:nowrap;color:#666;text-align:right;}
#ygrp-actbar .left{
float:left;white-space:nowrap;}
```

```
.bld{font-weight:bold;}
#ygrp-grft{
font-family:Verdana;font-size:77%;padding:15px 0;}
#ygrp-ft{
font-family:verdana;font-size:77%;border-top:1px solid #666;
padding:5px 0;
}
#ygrp-mlmsg #logo{
padding-bottom:10px;}

#ygrp-vital{
background-color:#e0ecee;margin-bottom:20px;padding:2px 0 8px 8px;}
#ygrp-vital #vithd{
font-size:77%;font-family:Verdana;font-weight:bold;color:#333;text-transform:uppercase;}
#ygrp-vital ul{
padding:0;margin:2px 0;}
#ygrp-vital ul li{
list-style-type:none;clear:both;border:1px solid #e0ecee;
}
#ygrp-vital ul li .ct{
font-weight:bold;color:#ff7900;float:right;width:2em;text-align:right;padding-right:.5em;}
#ygrp-vital ul li .cat{
font-weight:bold;}
#ygrp-vital a{
text-decoration:none;}

#ygrp-vital a:hover{
text-decoration:underline;}

#ygrp-sponsor #hd{
color:#999;font-size:77%;}
#ygrp-sponsor #ov{
padding:6px 13px;background-color:#e0ecee;margin-bottom:20px;}
#ygrp-sponsor #ov ul{
padding:0 0 0 8px;margin:0;}
#ygrp-sponsor #ov li{
list-style-type:square;padding:6px 0;font-size:77%;}
#ygrp-sponsor #ov li a{
text-decoration:none;font-size:130%;}
#ygrp-sponsor #nc{
background-color:#eee;margin-bottom:20px;padding:0 8px;}
#ygrp-sponsor .ad{
padding:8px 0;}
#ygrp-sponsor .ad #hd1{
font-family:Arial;font-weight:bold;color:#628c2a;font-size:100%;line-height:122%;}
#ygrp-sponsor .ad a{
text-decoration:none;}
#ygrp-sponsor .ad a:hover{
text-decoration:underline;}
#ygrp-sponsor .ad p{
margin:0;}
```

```
o{font-size:0;}
.MsoNormal{
margin:0 0 0 0;}
#ygrp-text tt{
font-size:120%;}
blockquote{margin:0 0 0 4px;}
.replbq{margin:4;}
-->
```

181. Re: [ferriterodantennaexperimenters] Re: [ferriterody antennaexperimenters] ferrite rods in plastic tubes

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-16 07:03:23 UTC
From: Paul V Birke PEng
Topic: 165 Message: 181

next-lux

ebay seller

sales@...

gordelux04

here is what I was able to buy maybe he has more I do not know

The Russian Ferrite rods M150VH meassure (160x8)mm

The rods were originally manufactured for HF wave transistor radio ferrite antennas.

best wishes
contact him and see what he can do or when he might get rods for you
Paul

182. Re: [ferriterodantennaexperimenters] great ferrite rods for sale 17cmx10mm

Yahoo group: ferriterodantennaexperimenters
Date: 2008-02-18 22:50:01 UTC
From: aimo ruoho
Topic: 160 Message: 182

Hello!
Gintaras Sakenas Ly2KW (ly2kw@...) is selling Large balun ferrite rods 10x200mm Lot of 8 at $20.59.
He claims, that he has lots of these to be sold on eBay!
I regret, that I purchased only 1 Lot of them! I should have asked for a lot more, because I learned the other day, that in one project I should use at least 24 of these rods.
This seller offers also FERRITE MAGNETIC LOOP ANTENNAS. Lot of 2 at $7.95.
eBay win. Items N:o 190975998527 and 190197460304 for the 2 items. Total purchases $28.54 + handling and postage.
Good luck!

Paul V Birke PEng <nonlinear@...> wrote:
Hallo Henry

for me I am ok now

but Amio in Spain is looking to buy some good rod

ie good for SW frequencies say up to 15 MHz or more

please contact Aimo
aimounto@yahoo. com

he is retired so you need to be kind to him

best und danke
Paul

ps I could be interested depending upon the information you give John Popelish- a good friend here in NA

----- Original Message ----
From: ehydra <ehydra@...>
To: ferriterodantennaexperimenters@yahoogroups.com
Sent: Saturday, February 16, 2008 11:54:57 AM
Subject: Re: [ferriterodantennaexperimenters] great ferrite rods for sale 17cmx10mm

Hello Paul -

Suggest a price and we see...

- Henry

Paul V Birke PEng schrieb:
> Dear Aimo
>
> certainly here in Canada 30$ per rod it better be more than excellent !!
>

> best wishes
> Paul
>
> ----- Original Message ----
> From: aimo ruoho <aimounto@yahoo. com>
> To: ferriterodantennaex perimenters@ yahoogroups. com
> Sent: Wednesday, February 13, 2008 6:27:28 PM
> Subject: Re: [ferriterodantennae xperimenters] great ferrite rods for sale 17cmx10mm
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> Those ferrite rods must be extraordinary good, because they cost so much!
>
> jpopelish@rica. net wrote:
>
> ----- Original Message Follows -----
> From: ehydra
> To: ferriterodantennaex perimenters@ yahoogroups. com
> Subject: [ferriterodantennae xperimenters] great ferrite rods
> for sale 17cmx10mm
> Date: Wed, 13 Feb 2008 18:01:16 +0100
>
>> Here is a copy of the mentioned post:
>>
>>
>> Hi low-frequency folks -
>>
>>
>> I managed to get a big lot of rods.
>>
>> So I can give away a bunch of ferrite rods for
>> experimenting. Great as antenna for up to 10MHz or as a
>> wideband transformer. If you can accept a sightly reduced
>> effective ui you can bundle them together.
>>
>> quick technical data:
>> manufacturer: Philips
>> material: 3B1
>> ui:
> 900

>> curie temerature: 150?C
>> length: 170mm
>> diameter: 10mm
>> outline: rod with six cuts (Improves Q of wound coil!)
>>
>> Price: Euro 18,-
>>
>> Here is more info:
>> http://www.ehydra. dyndns.info/ temp_ferrite/
>>
>>
>> And I sell LCD 2x10 with i2c serial bus connection AND
>> backlight: Euro 13,- It is entirely shielded in tin metal
>> and approx. 55x30mm outline. See photo here:
>> http://www.ehydra. dyndns.info/ temp_ferrite/
>>
>>
>> Shippping is from Germany. You can pay with PayPal
>> (ehydra@arcor. de) or bank account transfer. I cannot offer
>> insurance for money sent by snail mail.
>> Shipping costs (insured) in Germany is Euro 6,-. Other
>> countries please ask or suggest a useful carrier.
>>
>>
>> Hope this helps. Just ask if you need further info.
>>
>>
>> regards -
>> Henry Kiefer
>
> Henry, do you have access to a data sheet
> for these rods,
> from the manufacturer?
> Did you buy these from the manufacturer, from a distributor,
> or from someone else?
>
> The reason I ask is that I have seen rods in that form made
> only of power materials (high Bsat, high curie temperature,
> moderate frequency capability).
>
> So I am concerned with your paper trail back to the maker,
> and that the rods are made of the material you think they
> are made of.
>

Never miss a thing. Make Yahoo your homepage.

183. Prices Going Up On Radio Shack Magnet Wire

Yahoo group: ferriterodantennaexperimenters
Date: 2008-04-15 19:01:35 UTC
From: Adam E.
Topic: 183 Message: 183

I was browsing at Radio Shack and the prices on the 3 pack of the 3 spools of magnet wire went up to $4.99 to $5.99. It might go up to $6.99. Is there anything or any other place to get magnet wire cheap and its affordable?

This is main reason why I don't shop at Radio Shack that much cause of their "war" prices its like the 7 Eleven for electronic devices. Like a convenience store for your cell phone. My projects are never getting done cause of prices going up on parts and also being out on my own.

Adam E.

http://www.radioshack.com/product/index.jsp?productId=2036277
$6 for magnet wire now!

184. Re: [ferriterodantennaexperimenters] Prices Going Up On Radio Shack Magnet Wire

Yahoo group: ferriterodantennaexperimenters
Date: 2008-04-15 22:17:50 UTC
From: John Popelish
Topic: 183 Message: 184

Adam E. wrote:
> I was browsing at Radio Shack and the prices on the 3 pack of the 3
> spools of magnet wire went up to $4.99 to $5.99. It might go up to
> $6.99. Is there anything or any other place to get magnet wire cheap
> and its affordable?
>
> This is main reason why I don't shop at Radio Shack that much cause of
> their "war" prices its like the 7 Eleven for electronic devices. Like
> a convenience store for your cell phone. My projects are never
> getting done cause of prices going up on parts and also being out on my
> own.

Ive bought a lot of magnet wire through eBay, but even that
is going up fast. A couple years ago I was getting copper
for as low as about $5 a pound plus shipping, but that has
roughly doubled in the past two years, just like gasoline
prices.

--
Regards,

John Popelish

185. Improve existing ferrite-rod antenna...

Yahoo group: ferriterodantennaexperimenters
Date: 2008-07-17 16:22:00 UTC
From: r_lebreton36
Topic: 185 Message: 185

Hello,

I have an old Realistic DX-392 multi-band receiver that works fairly well. However, its AM reception is luke warm and I was wondering if there were some tricks I could employ to improve the AM sensitivity?

TIA...

186. Re: [ferriterodantennaexperimenters] Improve existing ferrite-rod antenna...

Yahoo group: ferriterodantennaexperimenters
Date: 2008-07-17 21:17:06 UTC
From: David Towers
Topic: 185 Message: 186

Hi
2 or 3 ideas
a preamp for the ferrite rod, a larger ferrite rod or a tuned loop
passive or active.
73
dave
G8SZX Glenfield Leicester IO92jp
webpage
www.g8szx.mediumwaveradio.org

r_lebreton36 wrote:
> Hello,
>
> I have an old Realistic DX-392 multi-band receiver that works
> fairly well. However, its AM reception is luke warm and I was
> wondering if there were some tricks I could employ to improve the AM
> sensitivity?
>
> TIA...
>
>
> ----------
>
> Yahoo! Groups Links
>
>
>
> ----------
> This message has been processed by Firetrust Benign.
>

187. Re: [ferriterodantennaexperimenters] Improve existing ferrite-rod antenna...

Yahoo group: ferriterodantennaexperimenters
Date: 2008-07-17 22:16:50 UTC
From: John Popelish
Topic: 185 Message: 187

r_lebreton36 wrote:
> Hello,
>
> I have an old Realistic DX-392 multi-band receiver that works
> fairly well. However, its AM reception is luke warm and I was
> wondering if there were some tricks I could employ to improve the AM
> sensitivity?

A simple thing to try is a dumb bell loop. That is a continuous loop of wire (ends of loop connected together), with one large loop at one end connected to a smaller loop at the other end of a pair of wires, twisted together. You can make it out of any small insulated wire, like doorbell wire. You can hide the larger loop around the back of a picture frame or around a window, the back of the couch or just run it around an entire wall of a room with no doors (so you don't trip over the wire, though you can run it up over the door frame).

The smaller loop is just large enough to go around the radio, so that it wraps around the internal ferrite loop antenna the same way its windings go around it. If you haven't seen how the internal ferrite rod is oriented, just have the small loop run up the front of the radio, across the top, and down the back. It will have a pair of dead zones perpendicular to the flat sides of the big loop. So set the big loop up to have the two vertical edges pointed in the most desired directions, or the flat sides toward the least desired directions.

--
Regards,

John Popelish

190. Choices for ULF/VLF antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2008-08-10 15:28:07 UTC
From: John
Topic: 190 Message: 190

I'm new to the group and noticed that most of you are interested in LF and higher freqs. I am interested currently in building receivers for ULF/VLK (300Hz to 30Khz), primarily for investigating atmospherics, gamma-ray bursts, navigation beacons and such.

Since the frequency is so low I plan to use my PC sound card as a "software defined radio". All I need is some minimal "frontend" hardware to condition the antenna signals up to levels that I can sample with the sound card, using DL4YHF's amazing Spectrum Lab freeware as the "backend" (freenet-homepage.de/dl4yhf/spectra1.html).

Here are some questions that I hope you can help me ansswer:
1. Which do you think is better for ULF/VLF: ferrite rod or open loop? (Or maybe even voltage-probed whip antenna?) My intuition tells me that a loop should work better because it has a larger "capture area", but there are probably other issues at play here.
2. In any case, I have three 6.5" rods salvaged from old AM radios that I would like to use for a "3-axis" X-Y-Z magnetometer-style receiver. Is there a simple forumula for calculating optimal number of turns etc?
3. Tuning: is it practical to wrap the turns on a sleeve so that the rod can be pushed in and out for tuning? Or is the tuning so broad that it's not worth the effort?

Tnx,
John/AF4EX

191. Re: [ferriterodantennaexperimenters] Choices for ULF/VLF antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2008-08-10 15:43:03 UTC
From: Chris Trask
Topic: 190 Message: 191

I devised an active ferrite rod antenna recently that included a means for remote tuning. It allows for using a high number of turns on the ferrite rod for better reception by placing a smaller inductance in parallel for the tuning. This provides a much higher tuning Q, and at resonance the amplifier sees the ferrite loop winding. The details for this are at:

http://tinyurl.com/ys293g

There is a paper that discusses optimizing the number of turns on the ferrite rod as well as the distribution of the winding:

Maksimenko, V.G., "The Optimization of a VLF-Band Magnetic
Antenna," Telecommunications and Radio Engineering, Vol. 45,
No. 5, May 1990, pp. 119-121.

>
>I'm new to the group and noticed that most of you are interested in
>LF and higher freqs. I am interested currently in building receivers
>for ULF/VLK (300Hz to 30Khz), primarily for investigating
>atmospherics, gamma-ray bursts, navigation beacons and such.
>
>Since the frequency is so low I plan to use my PC sound card as
>a "software defined radio". All I need is some minimal "frontend"
>hardware to condition the antenna signals up to levels that I can
>sample with the sound card, using DL4YHF's amazing Spectrum Lab
>freeware as the "backend" (freenet-homepage.de/dl4yhf/spectra1.html).
>
>Here are some questions that I hope you can help me ansswer:
>1. Which do you think is better for ULF/VLF: ferrite rod or open
>loop? (Or maybe even voltage-probed whip antenna?) My intuition
>tells me that a loop should work better because it has a
>larger "capture area", but there are probably other issues at play
>here.
>2. In any case, I have three 6.5" rods salvaged from old AM radios
>that I would like to use for a "3-axis" X-Y-Z magnetometer-style
>receiver. Is there a simple forumula for calculating optimal number
>of turns etc?
>3. Tuning: is it practical to wrap the turns on a sleeve so that the
>rod can be pushed in and out for tuning? Or is the tuning so broad
>that it's not worth the effort?
>
>Tnx,
>John/AF4EX
>
>
>----------

```
>
>Yahoo! Groups Links
>
>
>
```

Chris

```
,----------------------. High Performance Mixers and
/ What's all this \ Amplifiers for RF Communications
/ extinct stuff, anyhow? /
\ _______,--------------' Chris Trask / N7ZWY
_ |/ Principal Engineer
oo\ Sonoran Radio Research
(__)\ _ P.O. Box 25240
\ \ .' `. Tempe, Arizona 85285-5240
\ \ / \
\ '" \ IEEE Senior Member #40274515
. ( ) \
'-| )__| :. \ Email: christrask@...
| | | | \ '. http://www.home.earthlink.net/~christrask
c__; c__; '-..'>.__
```

Graphics by Loek Frederiks

192. Re: Choices for ULF/VLF antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2008-08-11 17:13:22 UTC
From: John
Topic: 190 Message: 192

--- Chris Trask wrote:

>> I devised an active ferrite rod antenna recently that ...

Great article Chris, helping me to get acquainted with the ways of the ferrite rod! (I'm a long way off from being an expert in this area).

>> There is a paper that discusses optimizing the number of turns on the ferrite rod ...

Sounds like a good article, but I have been unable to locate a copy. Could you possibly provide us a copy of it (or perhaps an extract of the relevant parts about computing turns etc)?

Thanks,
John/AF4EX

193. New file uploaded to ferriterodantennaexperimenters

Yahoo group: ferriterodantennaexperimenters
Date: 2008-08-11 20:19:59 UTC
From: ferriterodantennaexperimenters@yahoogroup
Topic: 59 Message: 193

Hello,

This email message is a notification to let you know that
a file has been uploaded to the Files area of the ferriterodantennaexperimenters
group.

File : /Maksimenko 1980.pdf
Uploaded by : chris3trask <christrask@...>
Description : The Optimization of a VLF-Band Magnetic Antenna

You can access this file at the URL:
http://groups.yahoo.com/group/ferriterodantennaexperimenters/files/Maksimenko%201980.pdf

To learn more about file sharing for your group, please visit:
http://help.yahoo.com/l/us/yahoo/groups/original/members/web/index.htmlfiles

Regards,

chris3trask <christrask@...>

194. Re: [ferriterodantennaexperimenters] Re: Choices for ULF/VLF antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2008-08-11 20:20:52 UTC
From: Chris Trask
Topic: 190 Message: 194

John,
>
> >> I devised an active ferrite rod antenna recently that ...
>
> Great article Chris, helping me to get acquainted with the ways of the
> ferrite rod! (I'm a long way off from being an expert in this area).
>
> >> There is a paper that discusses optimizing the number of turns on
> the ferrite rod ...
>
> Sounds like a good article, but I have been unable to locate a copy.
> Could you possibly provide us a copy of it (or perhaps an extract of
> the relevant parts about computing turns etc)?
>

I just uploaded that paper into the group files section as it seemed to
be of value to the group at large. The name is Maksimenko 1980.PDF, and
there should be an email announcement about it shortly.

Chris

```
,----------------------. High Performance Mixers and
/ What's all this \ Amplifiers for RF Communications
/ extinct stuff, anyhow? /
\ _______,--------------' Chris Trask / N7ZWY
_ |/ Principal Engineer
oo\ Sonoran Radio Research
(__)\ _ P.O. Box 25240
\ \ .' `. Tempe, Arizona 85285-5240
\ \ / \
\ '" \ IEEE Senior Member #40274515
. ( ) \
'-| )__| :. \ Email: christrask@...
| | | | \ '. http://www.home.earthlink.net/~christrask
c__; c__; '-..'>.__
```

Graphics by Loek Frederiks

195. Re: [ferriterodantennaexperimenters] Choices for ULF/VLF antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2008-08-13 16:10:44 UTC
From: ehydra
Topic: 190 Message: 195

Hi Chris -

Is it possible to get a scan of it or is it available online?

regards -
Henry

Chris Trask schrieb:
> I devised an active ferrite rod antenna recently that included a means for remote tuning. It allows for using a high number of turns on the ferrite rod for better reception by placing a smaller inductance in parallel for the tuning. This provides a much higher tuning Q, and at resonance the amplifier sees the ferrite loop winding. The details for this are at:
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>
>
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>> larger "capture area", but there are probably other issues at play
>> here.
>> 2. In any case, I have three 6.5" rods salvaged from old AM radios
>> that I would like to use for a "3-axis" X-Y-Z magnetometer-style
>> receiver. Is there a simple forumula for calculating optimal number
>> of turns etc?

```
>> 3. Tuning: is it practical to wrap the turns on a sleeve so that the
>> rod can be pushed in and out for tuning? Or is the tuning so broad
>> that it's not worth the effort?
>>
>> Tnx,
>> John/AF4EX
>>
>>
>> ------------------------------------
>>
>> Yahoo! Groups Links
>>
>>
>>
>
>
> Chris
>
> ,----------------------. High Performance Mixers and
> / What's all this \ Amplifiers for RF Communications
> / extinct stuff, anyhow? /
> \ _______,--------------' Chris Trask / N7ZWY
> _ |/ Principal Engineer
> oo\ Sonoran Radio Research
> (__)\ _ P.O. Box 25240
> \ \ .' `. Tempe, Arizona 85285-5240
> \ \ / \
> \ '" \ IEEE Senior Member #40274515
> . ( ) \
> '-| )__| :. \ Email: christrask@...
> | | | | \ '. http://www.home.earthlink.net/~christrask
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> Graphics by Loek Frederiks
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> Yahoo! Groups Links
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www.ehydra.dyndns.info
```

196. Re: [ferriterodantennaexperimenters] Re: Choices for ULF/VLF antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2008-08-13 16:12:25 UTC
From: ehydra
Topic: 190 Message: 196

Thanks Chris! I should read backward the messages ;-)

- Henry

Chris Trask schrieb:
> John,
>>>> I devised an active ferrite rod antenna recently that ...
>> Great article Chris, helping me to get acquainted with the ways of the
>> ferrite rod! (I'm a long way off from being an expert in this area).
>>
>>>> There is a paper that discusses optimizing the number of turns on
>> the ferrite rod ...
>>
>> Sounds like a good article, but I have been unable to locate a copy.
>> Could you possibly provide us a copy of it (or perhaps an extract of
>> the relevant parts about computing turns etc)?
>>
>
> I just uploaded that paper into the group files section as it seemed to
> be of value to the group at large. The name is Maksimenko 1980.PDF, and
> there should be an email announcement about it shortly.
>
> Chris
>
> ,----------------------. High Performance Mixers and
> / What's all this \ Amplifiers for RF Communications
> / extinct stuff, anyhow? /
> \ _______,--------------' Chris Trask / N7ZWY
> _ |/ Principal Engineer
> oo\ Sonoran Radio Research
> (__)\ _ P.O. Box 25240
> \ \ .' `. Tempe, Arizona 85285-5240
> \ \ / \
> \ '" \ IEEE Senior Member #40274515
> . ( ) \
> '-|)__| :. \ Email: christrask@...
> | | | | \ '. http://www.home.earthlink.net/~christrask
> c__; c__; '-..'>.__
>
> Graphics by Loek Frederiks
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> ------------------------------------
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> Yahoo! Groups Links

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197. Varactor-Tuned Loop Antennas

Yahoo group: ferriterodantennaexperimenters
Date: 2008-08-27 19:31:38 UTC
From: Chris Trask
Topic: 197 Message: 197

I finally completed the work that I have been doing on a simple varactor-tuned loop antenna with interchangeable antenna elements. The documentation is available at:

http://tinyurl.com/6lht4y

A little more work needs to be done here as the inductance of the transformers is limiting the high end of the tuning range. However, the results obtained at this point show that the sensitivity is far better than I had anticipated, and together with the very good S/N performance this design rivals the performance my earlier active loop antenna that was published in QEX back in 2003.

Corrections and constructive comments are always appreciated.

Chris

```
,----------------------. High Performance Mixers and
/ What's all this \ Amplifiers for RF Communications
/ extinct stuff, anyhow? /
\ _______,--------------' Chris Trask / N7ZWY
_ |/ Principal Engineer
oo\ Sonoran Radio Research
(__)\ _ P.O. Box 25240
\ \ .' `. Tempe, Arizona 85285-5240
\ \ / \
\ '" \ IEEE Senior Member #40274515
. ( ) \
'-| )__| :. \ Email: christrask@...
| | | | \ '. http://www.home.earthlink.net/~christrask
c__; c__; '-..'>.__
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Graphics by Loek Frederiks

198. Any tips for woundings coils over ferrite rods?

Yahoo group: ferriterodantennaexperimenters
Date: 2008-08-28 13:05:09 UTC
From: huelbeag
Topic: 198 Message: 198

Hello!

I'm planning to experiment a little with ferrite antennas this weekend. While mentally preparing for this :), I came to a doubt: how is it like to wound coil over ferrite rod?

I mean: a round ferrite rod is very sleek (don't have any texture) and fragile. I'll use a enameled, more-or-less thick wire. I don't expect this wire will hold (per se) to the rod.

What are the recommended technique to hold the coil to the core? I thought in using hot glue, adhesive tape or even candle wax :)

Thank you!

Huelbe Garcia
Porto Alegre, Brazil

199. Re: [ferriterodantennaexperimenters] Any tips for woundings coils over ferrite rods?

Yahoo group: ferriterodantennaexperimenters
Date: 2008-08-28 13:50:41 UTC
From: John Popelish
Topic: 198 Message: 199

huelbeag wrote:
> Hello!
>
> I'm planning to experiment a little with ferrite antennas this
> weekend. While mentally preparing for this :), I came to a doubt: how
> is it like to wound coil over ferrite rod?
>
> I mean: a round ferrite rod is very sleek (don't have any texture) and
> fragile. I'll use a enameled, more-or-less thick wire. I don't expect
> this wire will hold (per se) to the rod.
>
> What are the recommended technique to hold the coil to the core? I
> thought in using hot glue, adhesive tape or even candle wax :)

Usually, a paper or plastic tube is used as a coil form, and
the rod is slid in after the coil is wound and taped down on
that tube. Any of the adhesives you mention can anchor the
wire to the tube and the rod to the tube. Add to those
epoxy and bee's wax.

--
Regards,

John Popelish

200. Re: [ferriterodantennaexperimenters] Any tips for woundings coils over ferrite rods?

Yahoo group: ferriterodantennaexperimenters
Date: 2008-08-28 13:57:55 UTC
From: huelbe_garcia@fastimap.com
Topic: 198 Message: 200

Hi John,

thank you for your tips.

The ferrite rod I have here has about 10mm of diameter (a little bit more than 3/8''). The usual form - PVC water pipes - are not made with such small diameter. I'll try to use a plastic or rubber hose as the form.

--hg

----- Original message -----
From: "John Popelish" <jpopelish@...>
To: ferriterodantennaexperimenters@yahoogroups.com
Date: Thu, 28 Aug 2008 09:50:41 -0400
Subject: Re: [ferriterodantennaexperimenters] Any tips for woundings coils over ferrite rods?

huelbeag wrote:
> Hello!
>
> I'm planning to experiment a little with ferrite antennas this
> weekend. While mentally preparing for this :), I came to a doubt: how
> is it like to wound coil over ferrite rod?
>
> I mean: a round ferrite rod is very sleek (don't have any texture) and
> fragile. I'll use a enameled, more-or-less thick wire. I don't expect
> this wire will hold (per se) to the rod.
>
> What are the recommended technique to hold the coil to the core? I
> thought in using hot glue, adhesive tape or even candle wax :)

Usually, a paper or plastic tube is used as a coil form, and the rod is slid in after the coil is wound and taped down on that tube. Any of the adhesives you mention can anchor the wire to the tube and the rod to the tube. Add to those epoxy and bee's wax.

--
Regards,

John Popelish

201. Re: [ferriterodantennaexperimenters] Any tips for woundings coils over ferrite rods?

Yahoo group: ferriterodantennaexperimenters
Date: 2008-08-28 14:32:30 UTC
From: John Popelish
Topic: 198 Message: 201

huelbe_garcia@... wrote:
> Hi John,
>
> thank you for your tips.
>
> The ferrite rod I have here has about 10mm of diameter (a little bit
> more than 3/8''). The usual form - PVC water pipes - are not made with
> such small diameter. I'll try to use a plastic or rubber hose as the
> form.

You might also try wrapping the rod in a few layers of waxed paper and then wrap that with a few layers of paper speared with a thin layer of epoxy or other glue. After the glue hardens, the waxed paper will allow you to slip the hard paper tube off the rod. Trim it to the desired size and wrap wire on it before sliding it back over the rod (without the waxed paper). I have used a wood dowel inside the paper tube to allow the tube to be chucked into a drill press (set to low speed) to wind wire.

--
Regards,

John Popelish

202. Re: [ferriterodantennaexperimenters] Any tips for woundings coils over ferrite rods?

Yahoo group: ferriterodantennaexperimenters
Date: 2008-08-28 14:41:46 UTC
From: Chris Trask
Topic: 198 Message: 202

```
>
>> thank you for your tips.
>>
>> The ferrite rod I have here has about 10mm of diameter (a little bit
>> more than 3/8''). The usual form - PVC water pipes - are not made with
>> such small diameter. I'll try to use a plastic or rubber hose as the
>> form.
>
>You might also try wrapping the rod in a few layers of waxed
>paper and then wrap that with a few layers of paper speared
>with a thin layer of epoxy or other glue. After the glue
>hardens, the waxed paper will allow you to slip the hard
>paper tube off the rod. Trim it to the desired size and
>wrap wire on it before sliding it back over the rod (without
>the waxed paper). I have used a wood dowel inside the paper
>tube to allow the tube to be chucked into a drill press (set
>to low speed) to wind wire.
>
```

Myself, I use a long bolt or section of threaded rod, a pair of nylon washers, and one or two nuts to hold things such as that in place. Then I mount a hand-cranked drill in a vise, which is much easier to control.

Chris


```
,----------------------. High Performance Mixers and
/ What's all this \ Amplifiers for RF Communications
/ extinct stuff, anyhow? /
\ _______,--------------' Chris Trask / N7ZWY
_ |/ Principal Engineer
oo\ Sonoran Radio Research
(__)\ _ P.O. Box 25240
\ \ .' `. Tempe, Arizona 85285-5240
\ \ / \
\ '" \ IEEE Senior Member #40274515
. ( ) \
'-| )__| :. \ Email: christrask@...
| | | | \ '. http://www.home.earthlink.net/~christrask
c__; c__; '-..'>.__
```


Graphics by Loek Frederiks

203. Re: [ferriterodantennaexperimenters] Any tips for woundings coils over ferrite rods?

Yahoo group: ferriterodantennaexperimenters
Date: 2008-08-28 18:10:29 UTC
From: Paul V Birke PEng
Topic: 198 Message: 203

Usually, a paper or plastic tube is used as a coil form, and
the rod is slid in after the coil is wound and taped down on
that tube. Any of the adhesives you mention can anchor the
wire to the tube and the rod to the tube. Add to those
epoxy and bee's wax.
****

My only comment here John is that the tube should be very thin

I have found the best performance is when the wires are right on the ferrite so if you are using tubes make sure they are not thick

You could make you own tube out of thin "plastic" sheet perferably a clear "plastic" so no rf absorbed

very best

Paul

204. Just joined the group

Yahoo group: ferriterodantennaexperimenters
Date: 2008-08-27 16:44:49 UTC
From: Paul C.
Topic: 204 Message: 204

Hello, just joined.

I'm also a member of the FMtuners, SW Ant, Loop Group, Icom R75, Ham Radio Deluxe, Grundig S350, and a few other radio groups. Also, am a member of a number of saxophone related groups/forums and moderate 5 of those.

Have been experimenting with regular air loops for a while, and just found this Ferrite Ant group. Looking fwd to learning more.

Plans are to make an easily portable AM/MW - at least 10 m antenna for casual listening when I travel due to business.

Paul C.
tenorman1952

Link to Paul's articles from Main page of "Saxgourmet":
http://www.saxgourmet.com
Listen to Paul's MP3's and view saxophone photos at:
http://briefcase.yahoo.com/tenorman1952

Paul Coats is the sole US importer of SAXRAX products from
http://www.saxrax.com
For SAXRAX products, email Paul at saxraxus@...

205. Re: [ferriterodantennaexperimenters] Any tips for woundings coils over ferrite rods?

Yahoo group: ferriterodantennaexperimenters
Date: 2008-08-28 18:13:04 UTC
From: Paul V Birke PEng
Topic: 198 Message: 205

```
----- Original Message ----
From: "huelbe_garcia@..." <huelbe_garcia@...>
To: ferriterodantennaexperimenters@yahoogroups.com;
ferriterodantennaexperimenters@yahoogroups.com
Sent: Thursday, August 28, 2008 9:57:55 AM
Subject: Re: [ferriterodantennaexperimenters] Any tips for woundings coils over ferrite
rods?

Hi John,

thank you for your tips.

The ferrite rod I have here has about 10mm of diameter (a little bit
more than 3/8''). The usual form - PVC water pipes - are not made with
such small diameter. I'll try to use a plastic or rubber hose as the
form.

plastic or rubber hose may be too thick
the winding tube needs to be somewhat strong but little thickness to keep coupling
coefficient high

best
Paul
```

206. telefunken pr761/4 for vlf/ulf?

Yahoo group: ferriterodantennaexperimenters
Date: 2008-10-31 14:38:43 UTC
From: rinus nienhuis
Topic: 206 Message: 206

Hi Group

Since last week i have a Telefunken PR761/4 Very Big Ferrite antenna
it is 73 cm long and there are 4 ferrites of 3 cm thick
Over the antenna is 1 thick winding

can somebody say if this can be of any use for VLF, 0-15 kHz ?Maybe in use with a capacitor?or something other?

it performs well on 23 kHz telex and 77.5 Mainflingen
but under 15 kHz i know there are Whistlers and Tweeks and Sferics and rsdn stations<which bandwidth i have to use?>
but i like to use the antenna also for that region
many thanks for your help

regards
rinus

207. Re: [ferriterodantennaexperimenters] telefunken pr761/4 for vlf/ulf?

Yahoo group: ferriterodantennaexperimenters
Date: 2008-11-22 16:54:24 UTC
From: ehydra
Topic: 206 Message: 207

rinus nienhuis schrieb:
> Hi Group
>
> Since last week i have a Telefunken PR761/4 Very Big Ferrite antenna
> it is 73 cm long and there are 4 ferrites of 3 cm thick
> Over the antenna is 1 thick winding
>
> can somebody say if this can be of any use for VLF, 0-15 kHz ?Maybe in use with a capacitor?or something other?
>
> it performs well on 23 kHz telex and 77.5 Mainflingen
> but under 15 kHz i know there are Whistlers and Tweeks and Sferics and rsdn stations<which bandwidth i have to use?>
> but i like to use the antenna also for that region
> many thanks for your help
>

Should be of no problem there. Resonate it with a capacitor.

Do you have a source of of this antenna? I like to get one.

Greetings -
Henry

--
www.ehydra.dyndns.info

208. iron wire as ferrite rod structure?

Yahoo group: ferriterodantennaexperimenters
Date: 2008-11-25 10:16:36 UTC
From: ehydra
Topic: 208 Message: 208

I found in a book the notice that the first ferrite-rod antennas actually were made of iron-powder sticks. Later on their were replaced with materials made of ferrite oxides.

Thinking of it, I wonder how a simple iron wire coil turned around as a air coil will work?

Does somebody have a clue if this works and is maybe efficient for low-frequencies?

Will the magnetic field lines circle around following the iron wire. Or go the bigger magnitude of them thru the air-filled middle?

regards -
Henry

--
www.ehydra.dyndns.info

209. Re: [ferriterodantennaexperimenters] iron wire as ferrite rod structure?

Yahoo group: ferriterodantennaexperimenters
Date: 2008-11-25 15:39:01 UTC
From: John Popelish
Topic: 208 Message: 209

ehydra wrote:
> I found in a book the notice that the first ferrite-rod antennas
> actually were made of iron-powder sticks. Later on their were replaced
> with materials made of ferrite oxides.
>
> Thinking of it, I wonder how a simple iron wire coil turned around as a
> air coil will work?
>
> Does somebody have a clue if this works and is maybe efficient for
> low-frequencies?
>
> Will the magnetic field lines circle around following the iron wire. Or
> go the bigger magnitude of them thru the air-filled middle?

Think of the magnetic signal as parallel lines of flux distributed in space. The high permeable rod is a sort of short cut for those lines of flux, since it takes less energy for them to pass through the rod than it takes for them to pass through air. So that bunch up in the rod, instead of passing neatly parallel to each other. One end of the rod gathers lines of flux into the rod and the other end sprays them back out into space, with all of them passing through the center section of the rod (surrounded by a coil that responds to their changing quantity). The longer the rod, and the higher its permeability at the signal frequency, the better a magnetic short circuit the rod is and the more efficiently it concentrates the passing flux field to pass it through the center of the coil.

Of course, since these "lines of flux" are a fiction intended to help you visualize what is happening, not actual things, this description is a bit approximate.

--
Regards,

John Popelish

210. Re: [ferriterodantennaexperimenters] iron wire as ferrite rod structure?

Yahoo group: ferriterodantennaexperimenters
Date: 2008-11-25 16:08:16 UTC
From: ehydra
Topic: 208 Message: 210

John Popelish schrieb:
[..]

>> Will the magnetic field lines circle around following the iron wire. Or
>> go the bigger magnitude of them thru the air-filled middle?
>
> Think of the magnetic signal as parallel lines of flux
> distributed in space. The high permeable rod is a sort of
> short cut for those lines of flux, since it takes less
> energy for them to pass through the rod than it takes for
> them to pass through air. So that bunch up in the rod,
> instead of passing neatly parallel to each other. One end
> of the rod gathers lines of flux into the rod and the other
> end sprays them back out into space, with all of them
> passing through the center section of the rod (surrounded by
> a coil that responds to their changing quantity). The
> longer the rod, and the higher its permeability at the
> signal frequency, the better a magnetic short circuit the
> rod is and the more efficiently it concentrates the passing
> flux field to pass it through the center of the coil.
>
> Of course, since these "lines of flux" are a fiction
> intended to help you visualize what is happening, not actual
> things, this description is a bit approximate.
>

Hi John!

Yes, that is the knowledge I have. But:

If I use this imagination model for the above problem I think the answer
is for at least not so big coil diameters that the flux lines go the way
thru the iron wire! The question is now: Will the flux modulation be
seen by the wire as current or is it blind to internal flux changes?

In 'normal' coils we have a _external_ field change sensed! The coil
winds around inner flux!

I find it really interesting. Please note that I don't wrote _copper_ wire!

regards -
Henry

--
www.ehydra.dyndns.info

211. Re: [ferriterodantennaexperimenters] iron wire as ferrite rod structure?

Yahoo group: ferriterodantennaexperimenters
Date: 2008-11-25 17:06:48 UTC
From: John Popelish
Topic: 208 Message: 211

ehydra wrote:

> Hi John!
>
> Yes, that is the knowledge I have. But:
>
> If I use this imagination model for the above problem I think the answer
> is for at least not so big coil diameters that the flux lines go the way
> thru the iron wire!

If the iron wire has a permeability greater than 1 at the
signal frequency (and eddy currents around the flux does not
much buck its changes) then the flux will concentrate into
the iron wire and follow it as long as the iron provides a
short cut.

> The question is now: Will the flux modulation be
> seen by the wire as current or is it blind to internal flux changes?

We have both iron wire and copper wire in this thought
experiment, and without a picture, I am not sure what we are
talking about, here.

In general, any conductivity surrounding a changing flux
will circulate current in proportion to the rate of change
of the flux inside the current path. This applies to both
the circumference of iron wires (which is a conductive
circuit surrounding changes in the flux passing through the
length of the wire) and to copper windings either shorted or
connected to a conductive load, if those windings surround
iron or anything passing flux through the window of the winding.

> In 'normal' coils we have a _external_ field change sensed! The coil
> winds around inner flux!

"Surrounds or encircles some of the flux path", is how I
think of it.

> I find it really interesting. Please note that I don't wrote _copper_ wire!
>
>
> regards -
> Henry
>
>

--
Regards,

John Popelish

212. Re: [ferriterodantennaexperimenters] iron wire as ferrite rod structure?

Yahoo group: ferriterodantennaexperimenters
Date: 2008-11-25 18:00:24 UTC
From: ehydra
Topic: 208 Message: 212

John Popelish schrieb:
> ehydra wrote:
>
>> Hi John!
>>
>> Yes, that is the knowledge I have. But:
>>
>> If I use this imagination model for the above problem I think the answer
>> is for at least not so big coil diameters that the flux lines go the way
>> thru the iron wire!
>
> If the iron wire has a permeability greater than 1 at the
> signal frequency (and eddy currents around the flux does not
> much buck its changes) then the flux will concentrate into
> the iron wire and follow it as long as the iron provides a
> short cut.

Exactly!

>
>> The question is now: Will the flux modulation be
>> seen by the wire as current or is it blind to internal flux changes?
>
> We have both iron wire and copper wire in this thought
> experiment, and without a picture, I am not sure what we are
> talking about, here.
>

Hm. I told about "iron wire" only!
To make it clear:
Imagine an air coil made of iron wire instead of common copper wire. I
thought this is clear.

So all the flux lines are inside the iron wire. As you wrote, they will
follow the iron-made coil inside!

> In general, any conductivity surrounding a changing flux
> will circulate current in proportion to the rate of change
> of the flux inside the current path. This applies to both
> the circumference of iron wires (which is a conductive
> circuit surrounding changes in the flux passing through the
> length of the wire) and to copper windings either shorted or
> connected to a conductive load, if those windings surround
> iron or anything passing flux through the window of the winding.
>
>> In 'normal' coils we have a _external_ field change sensed! The coil

>> winds around inner flux!
>
> "Surrounds or encircles some of the flux path", is how I
> think of it.
>
>> I find it really interesting. Please note that I don't wrote _copper_ wire!
>>

Now I'm really confused. Do we talk about the same thing?

- Henry

--
www.ehydra.dyndns.info

213. Re: [ferriterodantennaexperimenters] iron wire as ferrite rod structure?

Yahoo group: ferriterodantennaexperimenters
Date: 2008-11-25 18:27:31 UTC
From: John Popelish
Topic: 208 Message: 213

ehydra wrote:

> Hm. I told about "iron wire" only!

I must have imagined that copper was involved. Sorry.

> To make it clear:
> Imagine an air coil made of iron wire instead of common copper wire. I
> thought this is clear.

It is now. The electrical coil is made of iron, instead of
copper. Got it.

> So all the flux lines are inside the iron wire. As you wrote, they will
> follow the iron-made coil inside!

But no so. Any current passed through the iron wire will
induce flux both within the wire (in a circumferential
direction), but also outside the wire. The high
permeability of the wire just increases the component that
lies inside the wire and surrounds it. Current through the
wire induces no flux along the length of the wire, only
around its circumference. Induced flux always wraps around
the current. The wire being made of a high permeability
material will have almost no effect on its voltage induced
across the coil in response to external flux that passes
through the window of the coil along its axis. Flux that is
aligned to a diameter of the coil will take a short cut
through the wire, but that process does not induce voltage
in the coil, since the coil does not surround that flux
component.

>> In general, any conductivity surrounding a changing flux
>> will circulate current in proportion to the rate of change
>> of the flux inside the current path. This applies to both
>> the circumference of iron wires (which is a conductive
>> circuit surrounding changes in the flux passing through the
>> length of the wire) and to copper windings either shorted or
>> connected to a conductive load, if those windings surround
>> iron or anything passing flux through the window of the winding.
>>
>>> In 'normal' coils we have a _external_ field change sensed! The coil
>>> winds around inner flux!
>> "Surrounds or encircles some of the flux path", is how I
>> think of it.
>>
>>> I find it really interesting. Please note that I don't wrote _copper_ wire!

>>>
>
> Now I'm really confused. Do we talk about the same thing?

Maybe, not yet. Perhaps we should have started with a drawing.

--
Regards,

John Popelish

214. Re: [ferriterodantennaexperimenters] iron wire as ferrite rod structure?

Yahoo group: ferriterodantennaexperimenters
Date: 2008-11-26 16:58:39 UTC
From: ehydra
Topic: 208 Message: 214

Hi John -

>> Hm. I told about "iron wire" only!
>
> I must have imagined that copper was involved. Sorry.
>
>> To make it clear:
>> Imagine an air coil made of iron wire instead of common copper wire. I
>> thought this is clear.
>
> It is now. The electrical coil is made of iron, instead of
> copper. Got it.

Yes.

>
>> So all the flux lines are inside the iron wire. As you wrote, they will
>> follow the iron-made coil inside!
>
> But no so. Any current passed through the iron wire will
> induce flux both within the wire (in a circumferential
> direction), but also outside the wire. The high
> permeability of the wire just increases the component that
> lies inside the wire and surrounds it. Current through the
> wire induces no flux along the length of the wire, only
> around its circumference. Induced flux always wraps around
> the current. The wire being made of a high permeability
> material will have almost no effect on its voltage induced
> across the coil in response to external flux that passes
> through the window of the coil along its axis. Flux that is
> aligned to a diameter of the coil will take a short cut
> through the wire, but that process does not induce voltage
> in the coil, since the coil does not surround that flux
> component.

OK. In quintesence, you wrote that it won't work as a new antenna with
increased ? !?

>
>>>> I find it really interesting. Please note that I don't wrote _copper_ wire!
>>>>
>> Now I'm really confused. Do we talk about the same thing?
>
> Maybe, not yet. Perhaps we should have started with a drawing.
>

OK, but it is complicated at least for me to generate a FEMM project file of a circulated structure. Surely I lost all cognitive intelligence about FEMM meanwhile. It is about 2 years back.

Thank you for your help!

- Henry

--
www.ehydra.dyndns.info

215. Re: [ferriterodantennaexperimenters] iron wire as ferrite rod structure?

Yahoo group: ferriterodantennaexperimenters
Date: 2008-11-26 17:27:51 UTC
From: John Popelish
Topic: 208 Message: 215

ehydra wrote:
> John Popelish wrote:
(snip)
>> But no so. Any current passed through the iron wire will
>> induce flux both within the wire (in a circumferential
>> direction), but also outside the wire. The high
>> permeability of the wire just increases the component that
>> lies inside the wire and surrounds it. Current through the
>> wire induces no flux along the length of the wire, only
>> around its circumference. Induced flux always wraps around
>> the current. The wire being made of a high permeability
>> material will have almost no effect on its voltage induced
>> across the coil in response to external flux that passes
>> through the window of the coil along its axis. Flux that is
>> aligned to a diameter of the coil will take a short cut
>> through the wire, but that process does not induce voltage
>> in the coil, since the coil does not surround that flux
>> component.
>
> OK. In quintesence, you wrote that it won't work as a new antenna with
> increased μ !?

I don't think it will. The wire runs around the received
flux, rather than along it, so it provides no short cut.

(snip)
>>> Now I'm really confused. Do we talk about the same thing?
>> Maybe, not yet. Perhaps we should have started with a drawing.
>>
>
> OK, but it is complicated at least for me to generate a FEMM project
> file of a circulated structure. Surely I lost all cognitive intelligence
> about FEMM meanwhile. It is about 2 years back.

Even a scan of a hand drawn sketch might be very helpful for
this sort of discussion. The shareware drawing program,
Draft Choice for Windows is also very easy to use to make
geometric drawings.

> Thank you for your help!

I'm nor sure how much of that has happened, but it is my
pleasure to try. Keep thinking!

--
Regards,

John Popelish

216. Re: [ferriterodantennaexperimenters] iron wire as ferrite rod structure?

Yahoo group: ferriterodantennaexperimenters
Date: 2008-11-26 20:16:07 UTC
From: ehydra
Topic: 208 Message: 216

Hi John -

Thank you again!

- Henry

John Popelish schrieb:
> ehydra wrote:
> > John Popelish wrote:
> (snip)
>>> But no so. Any current passed through the iron wire will
>>> induce flux both within the wire (in a circumferential
>>> direction), but also outside the wire. The high
>>> permeability of the wire just increases the component that
>>> lies inside the wire and surrounds it. Current through the
>>> wire induces no flux along the length of the wire, only
>>> around its circumference. Induced flux always wraps around
>>> the current. The wire being made of a high permeability
>>> material will have almost no effect on its voltage induced
>>> across the coil in response to external flux that passes
>>> through the window of the coil along its axis. Flux that is
>>> aligned to a diameter of the coil will take a short cut
>>> through the wire, but that process does not induce voltage
>>> in the coil, since the coil does not surround that flux
>>> component.
>> OK. In quintesence, you wrote that it won't work as a new antenna with
>> increased ? !?
>
> I don't think it will. The wire runs around the received
> flux, rather than along it, so it provides no short cut.
>
> (snip)
>>>> Now I'm really confused. Do we talk about the same thing?
>>> Maybe, not yet. Perhaps we should have started with a drawing.
>>>
>> OK, but it is complicated at least for me to generate a FEMM project
>> file of a circulated structure. Surely I lost all cognitive intelligence
>> about FEMM meanwhile. It is about 2 years back.
>
> Even a scan of a hand drawn sketch might be very helpful for
> this sort of discussion. The shareware drawing program,
> Draft Choice for Windows is also very easy to use to make
> geometric drawings.
>
>> Thank you for your help!
>

> I'm nor sure how much of that has happened, but it is my
> pleasure to try. Keep thinking!
>

--
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217. Re: [ferriterodantennaexperimenters] iron wire as ferrite rod structure?

Yahoo group: ferriterodantennaexperimenters
Date: 2008-11-25 16:17:51 UTC
From: aimo ruoho
Topic: 208 Message: 217

Hi!
Why don't you try once yourself?
I bought iron wire thinking it were copper clad with nickel and plastic cover.
Wound and wound and wound and made a large coil working but rather weak signals came through it. It works, but obviously would need a strong antenna amplifier connected in-between it and receiver...Perhaps a tuner would help? I didn't test it that way, I think?
73 de AR

--- El mar, 25/11/08, ehydra <ehydra@...> escribió:

De: ehydra <ehydra@...>
Asunto: [ferriterodantennaexperimenters] iron wire as ferrite rod structure?
Para: ferriterodantennaexperimenters@yahoogroups.com
Fecha: martes, 25 noviembre, 2008 11:16

I found in a book the notice that the first ferrite-rod antennas
actually were made of iron-powder sticks. Later on their were replaced
with materials made of ferrite oxides.

Thinking of it, I wonder how a simple iron wire coil turned around as a
air coil will work?

Does somebody have a clue if this works and is maybe efficient for
low-frequencies?

(rest eliminated)

218. Monster Ferrite Rods at www.stormwise.com - Anyone every try one of these?

Yahoo group: ferriterodantennaexperimenters
Date: 2008-11-27 12:44:19 UTC
From: patbelcher
Topic: 218 Message: 218

Just wondering if anyone has tried one of the giant ferrite rods at stormwise.com. I was thinking about getting one and purchasing their plans for the MW/LW radio. I would imagine that these could get excellent results. Any thoughts? Are they worth it?
Thanks in advance for your thoughts and opinions.
Pat

219. Re: [ferriterodantennaexperimenters] Monster Ferrite Rods at www.stormwise.com - Anyone every try one of these?

Yahoo group: ferriterodantennaexperimenters
Date: 2008-12-03 15:38:13 UTC
From: ehydra
Topic: 218 Message: 219

I guess from my experience with self-made ferrit-rod receivers it is not worth the extended money. If you buy a small one and connect a low-noise pre-amp it is much cheaper solution.

If you want to transmit then it is a good option to get a big one because you can increase transmit power. It is limited to a constant by normalized ferrite volume.

- Henry

patbelcher schrieb:
> Just wondering if anyone has tried one of the giant ferrite rods at
> stormwise.com. I was thinking about getting one and purchasing their
> plans for the MW/LW radio. I would imagine that these could get
> excellent results. Any thoughts? Are they worth it?
> Thanks in advance for your thoughts and opinions.
> Pat
>
>
> ------------------------------------
>
> Yahoo! Groups Links
>
>
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>

--
www.ehydra.dyndns.info

220. Re: Monster Ferrite Rods at www.stormwise.com - Anyone every try one of these?

Yahoo group: ferriterodantennaexperimenters
Date: 2008-12-03 18:24:34 UTC
From: John Stumm
Topic: 218 Message: 220

Actually you can get good results with just a rod tuned with a variable cap - especially when you tie a long wire to one end of the loop and loosely the other end to ground via a small value cap. 50 -100 pico farads is plenty. I was able to get good results using the ground connection in a shop outlet. I was recently the recipient of a smart watt-hour-meter which is playing havoc with reception below anything on low end of the BCB <1mhz. Bummer, although the noise deminishes once you get a couple feet away from any 110 conductor. Still a pain! So they are worth it, but you don't necessarily need a giant one.

john

> Just wondering if anyone has tried one of the giant ferrite rods at
> stormwise.com. I was thinking about getting one and purchasing their
> plans for the MW/LW radio. I would imagine that these could get
> excellent results. Any thoughts? Are they worth it?
> Thanks in advance for your thoughts and opinions.
> Pat

221. Litz wire

Yahoo group: ferriterodantennaexperimenters
Date: 2009-02-05 00:09:42 UTC
From: tim
Topic: 221 Message: 221

Can someone recommend the right size litz wire for 530-1710kHz? I am trying to make a loopstick antenna, ferrite measures 7.5" long 1/2" diameter. Also number of turns info would be helpful too.

222. Re: Litz wire

Yahoo group: ferriterodantennaexperimenters
Date: 2009-02-09 20:57:56 UTC
From: John Stumm
Topic: 221 Message: 222

--- In ferriterodantennaexperimenters@yahoogroups.com, "tim"
<sparkman386@...> wrote:
>

Can someone recommend the right size litz wire for 530-1710kHz? I am
> trying to make a loopstick antenna, ferrite measures 7.5" long 1/2"
> diameter. Also number of turns info would be helpful too.
>
Tim,
I got my Litz wire from a guy by the name of Paul, (Vanagon on ebay).
He used to sell smaller quantities than the 200 ft spools he now offers.
I got 100 ft of 175 strand/46 guage and it worked like gangbusters when
i used in my high performance crystal rig. He might sell you a 100 ft
if you ask. For the AM band it seems adequate. Not sure if more strands
would be better, because,
There's another gent that I got a large number of Ge diodes for cheap
who goes by vanscience. He's selling 200 ft spools of 220/46 for the
same 50 dollars + 6.50 shipping from CAN though. Also has 660/46 for
same price - but less length. That might be overkill when used with
ferrite. I know super high performance crystal radio builders use it
for their air wound spider coils. Thing is, you don't need that much.
I'd start with 60 - 70 turns to tune the BCB - depending on the
variable cap you employ. Are you going to add an amplifier circuit at
some point/

73
John

223. Re: Litz wire

Yahoo group: ferriterodantennaexperimenters
Date: 2009-02-12 17:32:55 UTC
From: aircheckclover
Topic: 221 Message: 223

I've seen the ads on eBay and having never seen Litz, here's a question ... when Litz is spec'd as 175/46 or 220/46 or 660/46 - what is it saying? Is 46 is equivalent gauge? If so, how is it possible to have 660 strands (so small!!??!!) equal to 46 gauge?

==========

--- In ferriterodantennaexperimenters@yahoogroups.com, "John Stumm" <jcstumm@...> wrote:
>
> --- In ferriterodantennaexperimenters@yahoogroups.com, "tim" <sparkman386@> wrote:
> >
>
>
> Can someone recommend the right size litz wire for 530-1710kHz? I am
> > trying to make a loopstick antenna, ferrite measures 7.5" long 1/2"
> > diameter. Also number of turns info would be helpful too.
> >
> Tim,
> I got my Litz wire from a guy by the name of Paul, (Vanagon on ebay).
> He used to sell smaller quantities than the 200 ft spools he now offers.
> I got 100 ft of 175 strand/46 guage and it worked like gangbusters when
> i used in my high performance crystal rig. He might sell you a 100 ft
> if you ask. For the AM band it seems adequate. Not sure if more strands
> would be better, because,
> There's another gent that I got a large number of Ge diodes for cheap
> who goes by vanscience. He's selling 200 ft spools of 220/46 for the
> same 50 dollars + 6.50 shipping from CAN though. Also has 660/46 for
> same price - but less length. That might be overkill when used with
> ferrite. I know super high performance crystal radio builders use it
> for their air wound spider coils. Thing is, you don't need that much.
> I'd start with 60 - 70 turns to tune the BCB - depending on the
> variable cap you employ. Are you going to add an amplifier circuit at
> some point/
>
> 73
> John
>

224. Re: [ferriterodantennaexperimenters] Re: Litz wire

Yahoo group: ferriterodantennaexperimenters
Date: 2009-02-12 17:50:56 UTC
From: John Popelish
Topic: 221 Message: 224

```
airchecklover wrote:
> I've seen the ads on eBay and having never seen Litz, here's a
> question ... when Litz is spec'd as 175/46 or 220/46 or 660/46 - what
> is it saying? Is 46 is equivalent gauge? If so, how is it possible
> to have 660 strands (so small!!??!!) equal to 46 gauge?

175/46 means 175 strands, each AWG 46.

--
Regards,

John Popelish
```

225. Re: [ferriterodantennaexperimenters] Re: Litz wire

Yahoo group: ferriterodantennaexperimenters
Date: 2009-02-12 17:51:40 UTC
From: Chris Trask
Topic: 221 Message: 225

```
>
> I've seen the ads on eBay and having never seen Litz, here's a
> question ... when Litz is spec'd as 175/46 or 220/46 or 660/46 - what
> is it saying? Is 46 is equivalent gauge? If so, how is it possible
> to have 660 strands (so small!!??!!) equal to 46 gauge?
>

If memory serves me well (which is questionable as I get older), X/Y
means that there are X number of strands of #Y wire. I have a 5lb spool of
#50 here, which is REALLY small. The junk yard I bought it from thought it
was thread and charged me $2 for it.

Chris

,----------------------. High Performance Mixers and
/ What's all this \ Amplifiers for RF Communications
/ extinct stuff, anyhow? /
\ _______,--------------' Chris Trask / N7ZWY
_ |/ Principal Engineer
oo\ Sonoran Radio Research
(__)\ _ P.O. Box 25240
\ \ .' `. Tempe, Arizona 85285-5240
\ \ / \
\ '" \ IEEE Senior Member #40274515
. ( ) \
'-| )__| :. \ Email: christrask@...
| | | | \ '. http://www.home.earthlink.net/~christrask
c__; c__; '-..'>.__

Graphics by Loek Frederiks
```

226. RE: [ferriterodantennaexperimenters] Re: Litz wire

Yahoo group: ferriterodantennaexperimenters
Date: 2009-02-12 18:13:46 UTC
From: Stumm, John C
Topic: 221 Message: 226
Attachments: 2 described; binary payloads are missing from this source WARC

> I've seen the ads on eBay and having never seen Litz, here's a

> question ... when Litz is spec'd as 175/46 or 220/46 or 660/46 - what

> is it saying? Is 46 is equivalent gauge? If so, how is it possible

> to have 660 strands (so small!!??!!) equal to 46 gauge?

>

> If memory serves me well (which is questionable as I get older), X/Y

>means that there are X number of strands of #Y wire. I have a 5lb spool of

>#50 here, which is REALLY small. The junk yard I bought it from thought it

>was thread and charged me $2 for it.

>Chris

Here an excerpt from seller ycy0609.

It gets pretty girthy? As the strand count goes up.

Up for sale is112 FEET Litz wire of 660 strands of #46 copper wire. The price is for 112' of the wire. It is wrapped with natural silk for insulation, which is not poly or nylon. The wire is on a plastic spool. The wire is perfectly easy to solder and you do not need to clean it. The colour is indicated in the photo.

.

[cid:image001.jpg@01C98CFA.977B1B70]

227. Re: Litz wire

Yahoo group: ferriterodantennaexperimenters
Date: 2009-02-14 05:19:05 UTC
From: aircheckclover
Topic: 221 Message: 227

Got it. Thanks.

==========

--- In ferriterodantennaexperimenters@yahoogroups.com, "aircheckclover"
<mdh@...> wrote:
>
> I've seen the ads on eBay and having never seen Litz, here's a
> question ... when Litz is spec'd as 175/46 or 220/46 or 660/46 - what
> is it saying? Is 46 is equivalent gauge? If so, how is it possible
> to have 660 strands (so small!!??!!) equal to 46 gauge?
>
> ==========
>
> --- In ferriterodantennaexperimenters@yahoogroups.com, "John Stumm"
> <jcstumm@> wrote:
> >
> > --- In ferriterodantennaexperimenters@yahoogroups.com, "tim"
> > <sparkman386@> wrote:
> > >
> >
> >
> > Can someone recommend the right size litz wire for 530-1710kHz? I am
> > > trying to make a loopstick antenna, ferrite measures 7.5" long 1/2"
> > > diameter. Also number of turns info would be helpful too.
> > >
> > Tim,
> > I got my Litz wire from a guy by the name of Paul, (Vanagon on ebay).
> > He used to sell smaller quantities than the 200 ft spools he now
offers.
> > I got 100 ft of 175 strand/46 guage and it worked like gangbusters
when
> > i used in my high performance crystal rig. He might sell you a 100 ft
> > if you ask. For the AM band it seems adequate. Not sure if more
strands
> > would be better, because,
> > There's another gent that I got a large number of Ge diodes for cheap
> > who goes by vanscience. He's selling 200 ft spools of 220/46 for the
> > same 50 dollars + 6.50 shipping from CAN though. Also has 660/46 for
> > same price - but less length. That might be overkill when used with
> > ferrite. I know super high performance crystal radio builders use it
> > for their air wound spider coils. Thing is, you don't need that much.
> > I'd start with 60 - 70 turns to tune the BCB - depending on the
> > variable cap you employ. Are you going to add an amplifier circuit at
> > some point/

> >
> > 73
> > John
> >
>

228. Re: Litz wire

Yahoo group: ferriterodantennaexperimenters
Date: 2009-02-14 05:20:07 UTC
From: aircheckclover
Topic: 221 Message: 228

Got it. Thanks. Is there a conversion chart somewhere that equates a
Litz X/Y spec to standard wire gauge?

==========

--- In ferriterodantennaexperimenters@yahoogroups.com, "Stumm, John C"
<jcstumm@...> wrote:
>
>
>
> > I've seen the ads on eBay and having never seen Litz, here's a
>
> > question ... when Litz is spec'd as 175/46 or 220/46 or 660/46 - what
>
> > is it saying? Is 46 is equivalent gauge? If so, how is it possible
>
> > to have 660 strands (so small!!??!!) equal to 46 gauge?
>
> >
>
>
>
> > If memory serves me well (which is questionable as I get
older), X/Y
>
> >means that there are X number of strands of #Y wire. I have a 5lb
spool of
>
> >#50 here, which is REALLY small. The junk yard I bought it from
thought it
>
> >was thread and charged me $2 for it.
>
>
>
> >Chris
>
>
>
>
>
> Here an excerpt from seller ycy0609.
>
> It gets pretty girthy? As the strand count goes up.
>

>
>
>
>
>
>
> Up for sale is112 FEET Litz wire of 660 strands of #46 copper wire.
The price is for 112' of the wire. It is wrapped with natural silk
for insulation, which is not poly or nylon. The wire is on a plastic
spool. The wire is perfectly easy to solder and you do not need to
clean it. The colour is indicated in the photo.
>
> .
>
>
>
>
> _____
>
> [cid:image001.jpg@...]
>

229. Re: [ferriterodantennaexperimenters] Re: Litz wire

Yahoo group: ferriterodantennaexperimenters
Date: 2009-02-15 23:07:39 UTC
From: John Popelish
Topic: 221 Message: 229

aircheckclover wrote:
> Got it. Thanks. Is there a conversion chart somewhere that equates a
> Litz X/Y spec to standard wire gauge?

You multiply the cross sectional area of one strand and
multiply that by the number of strands, then look up the
size that has about that total cross sectional area. Here
is a wire table I use a lot:
http://www.pupman.com/listarchives/1998/April/msg00222.html
Unfortunately, it only goes to 40 AWG.
But you may notice that if you add 3 gauges up, the area
falls by about half. So 43 AWG is half the copper area of
AWG40, etc.

Here are the formulas for AWG sizes:
http://en.wikipedia.org/wiki/American_wire_gauge
--
Regards,

John Popelish

230. Re: Litz wire

Yahoo group: ferriterodantennaexperimenters
Date: 2009-02-16 17:46:09 UTC
From: aircheckclover
Topic: 221 Message: 230

John; Perfect. Well, except for the 'math' part. Me and equations get
along less and less as I age. But just the same, thanks!

Mark

==========

--- In ferriterodantennaexperimenters@yahoogroups.com, John Popelish
<jpopelish@...> wrote:
>
> aircheckclover wrote:
> > Got it. Thanks. Is there a conversion chart somewhere that equates a
> > Litz X/Y spec to standard wire gauge?
>
> You multiply the cross sectional area of one strand and
> multiply that by the number of strands, then look up the
> size that has about that total cross sectional area. Here
> is a wire table I use a lot:
> http://www.pupman.com/listarchives/1998/April/msg00222.html
> Unfortunately, it only goes to 40 AWG.
> But you may notice that if you add 3 gauges up, the area
> falls by about half. So 43 AWG is half the copper area of
> AWG40, etc.
>
> Here are the formulas for AWG sizes:
> http://en.wikipedia.org/wiki/American_wire_gauge
> --
> Regards,
>
> John Popelish
>

231. Re: Monster Ferrite Rods at www.stormwise.com - Anyone every try one of these?

Yahoo group: ferriterodantennaexperimenters
Date: 2009-03-19 15:30:23 UTC
From: salmonguyrep
Topic: 218 Message: 231

--- In ferriterodantennaexperimenters@yahoogroups.com, "patbelcher" <patbelcher@...> wrote:
>
> Just wondering if anyone has tried one of the giant ferrite rods at
> stormwise.com. I was thinking about getting one and purchasing their
> plans for the MW/LW radio. I would imagine that these could get
> excellent results. Any thoughts? Are they worth it?
> Thanks in advance for your thoughts and opinions.
> Pat
>
I have the Stormwise 27" giant ferrite, 25' of top grade litz wire (Dave Schmarder), a 365 varicap w/ 8:1 vernier reduction drive built in (Crystal Radio Society). Have already wrapped 40 turns of single strand 28 AWG and use the varicap to resonate--inductive coupling to my G5--pins even faint stations--will try w/ my 2010 soon. Have padded the rod, which comes in sealed PVC, with rubber foam for air conditioning conduits (Home Depot) and will ultimately put the whole contraption into a 3" dia PVC that is 3' long. Debating whether to end mount the varicap or put it into a project box placed adjacent to the coil in the middle of the bar. I picked up a camera tripod at Circuit City as a close out last month for $10, and will mount the completed antenna on that for 360 degree nulling capability plus azimuth adjustment. Already is clearly better for nulls and peaking compared to my 3' x 3' homebrew box loop--this is before the high Q litz wire coil being deployed. Stay tuned...

232. Re: Monster Ferrite Rods at www.stormwise.com - Anyone every try one of these?

Yahoo group: ferriterodantennaexperimenters
Date: 2009-03-19 15:34:04 UTC
From: salmonguyrep
Topic: 218 Message: 232

--- In ferriterodantennaexperimenters@yahoogroups.com, ehydra <ehydra@...> wrote:
>
> I guess from my experience with self-made ferrit-rod receivers it is not
> worth the extended money. If you buy a small one and connect a low-noise
> pre-amp it is much cheaper solution.
>
> If you want to transmit then it is a good option to get a big one
> because you can increase transmit power. It is limited to a constant by
> normalized ferrite volume.
>
>
> - Henry
>
>
> patbelcher schrieb:
> > Just wondering if anyone has tried one of the giant ferrite rods at
> > stormwise.com. I was thinking about getting one and purchasing their
> > plans for the MW/LW radio. I would imagine that these could get
> > excellent results. Any thoughts? Are they worth it?
> > Thanks in advance for your thoughts and opinions.
> > Pat
> >
> >
> > ------------------------------------
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> > Yahoo! Groups Links
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> --
> www.ehydra.dyndns.info
>
I have tried that before--see my other posting--I had a ferrite bar made of overlapping Amidon 7.5" bars--three per, for a total length of about 24"--fed into a BAX-1 pre-amp--very noisy compared to the monster ferrite without amplification. Maybe there is a better (less noise) per-amp out there?

233. Re: Monster Ferrite Rods at www.stormwise.com - Anyone every try one of these?

Yahoo group: ferriterodantennaexperimenters
Date: 2009-03-23 15:48:09 UTC
From: aircheckclover
Topic: 218 Message: 233

Interesting results so far. I've found a 2ft (well-constructed/efficient) loop doesn't do appreciably worse than a 3.5 ft loop, so I've stuck with the 2 ft. loop. For added gain I use the CCrane Twin-Ferrite inductively coupled to the 2 ft loop. It's really a twin-stage tuned circuit and increases the ability of either antenna alone by almost 50%. But I keep thinking there could be something even better. Keep us posted!

==========

--- In ferriterodantennaexperimenters@yahoogroups.com, "salmonguyrep" <rpollock@...> wrote:
>
> --- In ferriterodantennaexperimenters@yahoogroups.com, "patbelcher" <patbelcher@> wrote:
> >
> > Just wondering if anyone has tried one of the giant ferrite rods at
> > stormwise.com. I was thinking about getting one and purchasing their
> > plans for the MW/LW radio. I would imagine that these could get
> > excellent results. Any thoughts? Are they worth it?
> > Thanks in advance for your thoughts and opinions.
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> >
> I have the Stormwise 27" giant ferrite, 25' of top grade litz wire (Dave Schmarder), a 365 varicap w/ 8:1 vernier reduction drive built in (Crystal Radio Society). Have already wrapped 40 turns of single strand 28 AWG and use the varicap to resonate--inductive coupling to my G5--pins even faint stations--will try w/ my 2010 soon. Have padded the rod, which comes in sealed PVC, with rubber foam for air conditioning conduits (Home Depot) and will ultimately put the whole contraption into a 3" dia PVC that is 3' long. Debating whether to end mount the varicap or put it into a project box placed adjacent to the coil in the middle of the bar. I picked up a camera tripod at Circuit City as a close out last month for $10, and will mount the completed antenna on that for 360 degree nulling capability plus azimuth adjustment. Already is clearly better for nulls and peaking compared to my 3' x 3' homebrew box loop--this is before the high Q litz wire coil being deployed. Stay tuned...
>

234. model skin effect (in toroids)

Yahoo group: ferriterodantennaexperimenters
Date: 2009-03-25 15:16:21 UTC
From: ehydra
Topic: 234 Message: 234

Personally I'm just wondering how to include skin effect in toroids for shortwave. I see a big difference between my LTspice simulation and the real circuit in resonance peaking.
So practically spoken: A T37-6 wound with 12 turns of 0.6mm diameter pvc isolated copper wire at 15MHz. What is a good model in LTspice for it?

regards -
Henry

--
www.ehydra.dyndns.info

235. Re: [ferriterodantennaexperimenters] Re: Monster Ferrite Rods at www.stormwise.com - Anyone every try one of these?

Yahoo group: ferriterodantennaexperimenters
Date: 2009-03-25 15:13:58 UTC
From: ehydra
Topic: 218 Message: 235

Sorry for late reply.

I tried it with SA612 as mixer. Receiving frequency about 6MHz. I was satisfied at least for receiving broadcast radio stations.

The problem with larger rod is a increase angle peaking. Which of course you already mentioned (and can be of benefit).

The antenna reciprocity theorem is confusing because it is for the antenna as a decoupled system useful but not for real-world! The power-amp, the first receiving active amplifier stage and of course the 'ether' is is just NOT! The ether generates constant noise (strongly frequency depend with a local minium between 1GHz and 10GHz 'microwave window') and additional the man-made signals, where you must ride above.

Conclusions:
1. The transmitter is power-limited
2. The receiver is S/N-limited

A weaker antenna just give lesser signal power (the vector addition of all received momentary field strength direction weighted). You can reduce the signal power down to the point where the own noise generated in the first receiving amp stage begins to dominate the output signal of this amp stage. If you can reduce the noise in this stage by technological progress, you can reduce the antenna size without any loss!

There is a limit in size by circuit losses and VERY small antennas own a different radiation diagram. I remember experiments with superconductive antennas for eliminating copper losses. They work.

At the moment I experiment with a 1.4m antenna monpole antenna at 15MHz. The class-D power-amp pumps the dominate blind-power between power-supply capacitor and resonate antenna system. Seem to work. I'm not thru the whole experiment at the moment.
BTW: radiation resistance is about 1.6 ohms.

regards -
Henry

--
www.ehydra.dyndns.info

salmonguyrep schrieb:
> I have tried that before--see my other posting--I had a ferrite bar made of overlapping Amidon 7.5" bars--three per, for a total length of about 24"--fed into a BAX-1 pre-amp--very noisy compared to the monster ferrite without amplification. Maybe there is a

better (less noise) per-amp out there?
>

> --- In ferriterodantennaexperimenters@yahoogroups.com, ehydra <ehydra@...> wrote:
>> I guess from my experience with self-made ferrit-rod receivers it is not
>> worth the extended money. If you buy a small one and connect a low-noise
>> pre-amp it is much cheaper solution.
>>
>> If you want to transmit then it is a good option to get a big one
>> because you can increase transmit power. It is limited to a constant by
>> normalized ferrite volume.
>>
>>
>> - Henry
>>
>>
>> patbelcher schrieb:
>>> Just wondering if anyone has tried one of the giant ferrite rods at
>>> stormwise.com. I was thinking about getting one and purchasing their
>>> plans for the MW/LW radio. I would imagine that these could get
>>> excellent results. Any thoughts? Are they worth it?
>>> Thanks in advance for your thoughts and opinions.
>>> Pat
>>>

236. Re: Monster Ferrite Rods at www.stormwise.com - Anyone every try one of these?

Yahoo group: ferriterodantennaexperimenters
Date: 2009-03-23 22:46:53 UTC
From: Aimo Unto Olavi RUOHO
Topic: 218 Message: 236

--- In ferriterodantennaexperimenters@yahoogroups.com, "salmonguyrep" <rpollock@...> wrote:
>
> --- In ferriterodantennaexperimenters@yahoogroups.com, "patbelcher" <patbelcher@> wrote:
> >
> > Just wondering if anyone has tried one of the giant ferrite rods at
> > stormwise.com. I was thinking about getting one and purchasing their
> > plans for the MW/LW radio. I would imagine that these could get
> > excellent results. Any thoughts? Are they worth it?
> > Thanks in advance for your thoughts and opinions.
> > Pat
> >

Aimo writes:

So you want to have the Stormwise Gigant!
I wonder, if I could glue 3 ferrite rods together one after another and get some similar effect. Should I use 10 or more of these parallel to get even better results? I namely happen to have about 40 of 8" long ferrite rods to play with... Perhaps the "Gigant" is very thick, too?

The Brazilians have been selling some big ferrite rod antennas for some time. They are built into a plastic tube with a variable capacitor.

I would like to imitate the Ccrane double coil system doing this.

Please give your valued opinions, if you think this might work or then not.

Nice building and listening to DX!

Amigo Aimo

> I have the Stormwise 27" giant ferrite, 25' of top grade litz wire (Dave Schmarder), a 365 varicap w/ 8:1 vernier reduction drive built in (Crystal Radio Society). Have already wrapped 40 turns of single strand 28 AWG and use the varicap to resonate--inductive coupling to my G5--pins even faint stations--will try w/ my 2010 soon. Have padded the rod, which comes in sealed PVC, with rubber foam for air conditioning conduits (Home Depot) and will ultimately put the whole contraption into a 3" dia PVC that is 3' long. Debating whether to end mount the varicap or put it into a project box placed adjacent to the coil in the middle of the bar. I picked up a camera tripod at Circuit City as a close out last month for $10, and will mount the completed antenna on that for 360 degree nulling capability plus azimuth adjustment. Already is clearly better for nulls and peaking compared to my 3' x 3' homebrew box loop--this is before the high Q litz wire coil being deployed. Stay tuned...
>

237. RE: [ferriterodantennaexperimenters] Re: Monster Ferrite Rods at www.stormwise.com - Anyone every try one of these?

Yahoo group: ferriterodantennaexperimenters
Date: 2009-03-23 16:55:11 UTC
From: Pollock,Raphael E
Topic: 218 Message: 237

That's interesting--I've thought about using the Crane twin coil to inductively couple the monster to my E1--will compare to secondary winding around the rod upon completion.

_____
From: ferriterodantennaexperimenters@yahoogroups.com
[ferriterodantennaexperimenters@yahoogroups.com] On Behalf Of aircheckclover [mdh@...]
Sent: Monday, March 23, 2009 10:48 AM
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: [ferriterodantennaexperimenters] Re: Monster Ferrite Rods at www.stormwise.com - Anyone every try one of these?

Interesting results so far. I've found a 2ft (well-constructed/efficient) loop doesn't do appreciably worse than a 3.5 ft loop, so I've stuck with the 2 ft. loop. For added gain I use the CCrane Twin-Ferrite inductively coupled to the 2 ft loop. It's really a twin-stage tuned circuit and increases the ability of either antenna alone by almost 50%. But I keep thinking there could be something even better. Keep us posted!

==========

--- In ferriterodantennaexperimenters@yahoogroups.com<mailto:ferriterodantennaexperimenters%40yahoogroups.com>, "salmonguyrep" <rpollock@...> wrote:
>
> --- In ferriterodantennaexperimenters@yahoogroups.com<mailto:ferriterodantennaexperimenters%40yahoogroups.com>, "patbelcher" <patbelcher@> wrote:
> >
> > Just wondering if anyone has tried one of the giant ferrite rods at
> > stormwise.com. I was thinking about getting one and purchasing their
> > plans for the MW/LW radio. I would imagine that these could get
> > excellent results. Any thoughts? Are they worth it?
> > Thanks in advance for your thoughts and opinions.
> > Pat
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> I have the Stormwise 27" giant ferrite, 25' of top grade litz wire (Dave Schmarder), a 365 varicap w/ 8:1 vernier reduction drive built in (Crystal Radio Society). Have already wrapped 40 turns of single strand 28 AWG and use the varicap to resonate--inductive coupling to my G5--pins even faint stations--will try w/ my 2010 soon. Have padded the rod, which comes in sealed PVC, with rubber foam for air conditioning conduits (Home Depot) and will ultimately put the whole contraption into a 3" dia PVC that is 3' long. Debating whether to end mount the varicap or put it into a project box placed adjacent to the coil in the middle of the bar. I picked up a camera tripod at Circuit City as a close out last month for $10, and will mount the completed antenna on that for 360 degree nulling capability plus azimuth adjustment. Already is clearly better for nulls and peaking compared to my 3' x 3' homebrew box loop--this is before the high Q litz wire coil being deployed. Stay tuned...
>

238. Long Ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2009-03-25 21:11:01 UTC
From: Stumm, John C
Topic: 218 Message: 238

Aimo,

Below is a quote from Chris Justice, the developer of the Twin Coil, from a thread from some years back; (old Ferrite rod group. 01/04)
I've been using rods up to about 18". Extending past that didn't help much.

Regards,
John

>Just a quick comment. As you increase the length or diameter of a ferrite >rod antenna, you reach a point of diminishing return.
>The "poles" of the ferrite rod have a "cancellation" effect which causes a >maximum point of effect on a received signal. So, in other- words, you >could have a ferrite rod of infinite length but will only get a signal >proportional to the maximum length of the effect.
>(ummmm, which I really have never spent the time to calculate) :)

>The effect is not linear but rather a logarithmic diminished effect.
>So, if you increase the length of your ferrite to 100 ft, it's effect would >only be slightly greater than a ferrite rod that is 10 inches long. >However, there is a trick with instantaneous switching of the fields in a >ferrite which would result in a greater density out of a smaller rod. So, >bigger isn't always better in the world of ferrite....

>Chris

> >
> > Just wondering if anyone has tried one of the giant ferrite rods at
> > stormwise.com. I was thinking about getting one and purchasing their
> > plans for the MW/LW radio. I would imagine that these could get
> > excellent results. Any thoughts? Are they worth it?
> > Thanks in advance for your thoughts and opinions.
> > Pat
> >

Aimo writes:

So you want to have the Stormwise Gigant!
I wonder, if I could glue 3 ferrite rods together one after another and get some similar effect. Should I use 10 or more of these parallel to get even better results? I namely happen to have about 40 of 8" long ferrite rods to play with... Perhaps the "Gigant" is very thick, too?

The Brazilians have been selling some big ferrite rod antennas for some time. They are built into a plastic tube with a variable capacitor.

I would like to imitate the Ccrane double coil system doing this.

Please give your valued opinions, if you think this might work or then not.

Nice building and listening to DX!

Amigo Aimo

239. Re: [ferriterodantennaexperimenters] Long Ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2009-03-25 22:25:26 UTC
From: ehydra
Topic: 218 Message: 239

Hm. Is it not just an effect of dimensional resonance? I remember that the first resonance frequency of ferrite materials is not very much higher than the normally used frequency. There is more in Snelling "Soft Ferrites".
As I recall the ferrite rod enters useless if this frequency is approached.

I think John Popelish can write more about it.

regards -
Henry

Stumm, John C schrieb:
> Aimo,
>
> Below is a quote from Chris Justice, the developer of the Twin Coil, from a thread from some years back; (old Ferrite rod group. 01/04)
> I've been using rods up to about 18". Extending past that didn't help much.
>

--
www.ehydra.dyndns.info

240. Re: [ferriterodantennaexperimenters] Long Ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2009-03-26 01:04:35 UTC
From: John Popelish
Topic: 218 Message: 240

ehydra wrote:
> Hm. Is it not just an effect of dimensional resonance? I remember that
> the first resonance frequency of ferrite materials is not very much
> higher than the normally used frequency. There is more in Snelling "Soft
> Ferrites".
> As I recall the ferrite rod enters useless if this frequency is approached.
>
>
> I think John Popelish can write more about it.

I am no theoretician on this topic, only an interested
student. But in the files section, in the Popelish sub
folder, are records of experiments I performed on various
ferrite rods and coils.

The rods in those experiments were made of stacks of long
form ferrite beads in 3 materials. I think the closest I
came to dealing with the resonance of the ferrite rods was
measuring the effect of small air gaps distributed
throughout the rods (which, as I understand it, should raise
the self resonant frequency a bit), compared to having the
pieces stacked against each other.

--
Regards,

John Popelish

241. Re: [ferriterodantennaexperimenters] Long Ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2009-03-25 21:52:29 UTC
From: aimo ruoho
Topic: 218 Message: 241

Thank you, John!

Chris was talking about length, not saying anything
about parallelled ferrites.

I have a photo copy of a ring-formed 20 ferrite
combination, which was tested by some enthusiasts.
As soon as time will be ripe, I'm going to test that
to see, if it will be any better than my Ccrane...
Insh Allah!?
Years go so fast in my 71 past year life, and I have
so many interesting things to study and do.

Best,
Aimo

De: "Stumm, John C" <jcstumm@...>
Para: "ferriterodantennaexperimenters@yahoogroups.com"
<ferriterodantennaexperimenters@yahoogroups.com>
Enviado: miércoles, 25 de marzo, 2009 22:11:01
Asunto: [ferriterodantennaexperimenters] Long Ferrite rods

Aimo,

Below is a quote from Chris Justice, the developer of the Twin Coil, from a thread from
some years back; (old Ferrite rod group. 01/04)
I've been using rods up to about 18". Extending past that didn't help much.

Regards,
John

>Just a quick comment. As you increase the length or diameter of a ferrite >rod antenna,
you reach a point of diminishing return.
>The "poles" of the ferrite rod have a "cancellation" effect which causes a >maximum point
of effect on a received signal. So, in other- words, you >could have a ferrite rod of
infinite length but will only get a signal >proportional to the maximum length of the
effect.
>(ummmm, which I really have never spent the time to calculate) :)

>The effect is not linear but rather a logarithmic diminished effect.
>So, if you increase the length of your ferrite to 100 ft, it's effect would >only be
slightly greater than a ferrite rod that is 10 inches long. >However, there is a trick with
instantaneous switching of the fields in a >ferrite which would result in a greater density
out of a smaller rod. So, >bigger isn't always better in the world of ferrite....

>Chris

> >
> > Just wondering if anyone has tried one of the giant ferrite rods at
> > stormwise.com. I was thinking about getting one and purchasing their
> > plans for the MW/LW radio. I would imagine that these could get
> > excellent results. Any thoughts? Are they worth it?
> > Thanks in advance for your thoughts and opinions.
> > Pat
> >

Aimo writes:

So you want to have the Stormwise Gigant!
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The Brazilians have been selling some big ferrite rod antennas for some time. They are built into a plastic tube with a variable capacitor.

I would like to imitate the Ccrane double coil system doing this.

Please give your valued opinions, if you think this might work or then not.

Nice building and listening to DX!

Amigo Aimo

242. RE: [ferriterodantennaexperimenters] Re: Monster Ferrite Rods at www.stormwise.com - Anyone every try one of these?

Yahoo group: ferriterodantennaexperimenters
Date: 2009-03-25 20:42:41 UTC
From: Pollock,Raphael E
Topic: 218 Message: 242

That is a very good approach as well--I made one about 25 years ago like that and still use it. My interest is to see if the monster ferrite works better than the small glued together rods, and if so, then can I avoid having to use pre-amp to get a sufficiently improved S/N ratio...Please let me know how your experiment proceeds...!

From: ferriterodantennaexperimenters@yahoogroups.com
[mailto:ferriterodantennaexperimenters@yahoogroups.com] On Behalf Of Aimo Unto Olavi RUOHO
Sent: Monday, March 23, 2009 5:47 PM
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: [ferriterodantennaexperimenters] Re: Monster Ferrite Rods at www.stormwise.com - Anyone every try one of these?

--- In ferriterodantennaexperimenters@yahoogroups.com<mailto:ferriterodantennaexperimenters%40yahoogroups.com>, "salmonguyrep" <rpollock@...> wrote:
>
> --- In ferriterodantennaexperimenters@yahoogroups.com<mailto:ferriterodantennaexperimenters%40yahoogroups.com>, "patbelcher" <patbelcher@> wrote:
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> > Just wondering if anyone has tried one of the giant ferrite rods at
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> > excellent results. Any thoughts? Are they worth it?
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> >

Aimo writes:

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Amigo Aimo

> I have the Stormwise 27" giant ferrite, 25' of top grade litz wire (Dave Schmarder), a 365 varicap w/ 8:1 vernier reduction drive built in (Crystal Radio Society). Have already wrapped 40 turns of single strand 28 AWG and use the varicap to resonate--inductive coupling to my G5--pins even faint stations--will try w/ my 2010 soon. Have padded the rod, which comes in sealed PVC, with rubber foam for air conditioning conduits (Home Depot) and will ultimately put the whole contraption into a 3" dia PVC that is 3' long. Debating whether to end mount the varicap or put it into a project box placed adjacent to the coil in the middle of the bar. I picked up a camera tripod at Circuit City as a close out last month for $10, and will mount the completed antenna on that for 360 degree nulling capability plus azimuth adjustment. Already is clearly better for nulls and peaking compared to my 3' x 3' homebrew box loop--this is before the high Q litz wire coil being deployed. Stay tuned...
>

243. Re: [ferriterodantennaexperimenters] Long Ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2009-03-26 02:10:47 UTC
From: ehydra
Topic: 218 Message: 243

There is a optimal length to diameter ratio. Something like 1/10 to 1/20.
The flux is concentrated right under the coil. I used a simulation prog.

Do yo mean the russian site photo? I've seen such a thing. If someone is
short on ferrite, that should be the optimum structure.

How do you dealing with the problem getting older and thinking time will
not enough? Sometimes I think about with my 43 years. Thinks are getting
more and more interesting if someone knows more. The horizont always
expands :-(

regards -
Henry

aimo ruoho schrieb:
> Thank you, John!
>
> Chris was talking about length, not saying anything
> about parallelled ferrites.
>
> I have a photo copy of a ring-formed 20 ferrite
> combination, which was tested by some enthusiasts.
> As soon as time will be ripe, I'm going to test that
> to see, if it will be any better than my Ccrane...
> Insh Allah!?
> Years go so fast in my 71 past year life, and I have
> so many interesting things to study and do.
>

244. Re: [ferriterodantennaexperimenters] Long Ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2009-03-26 22:06:21 UTC
From: aimo ruoho
Topic: 218 Message: 244

Thanks!
Nice from your part to give your opinion.
Yes, it was the Russian site photo!
Very interesting in deed.
Getting older is getting younger...
You just feel, that things go faster and faster,
and you get slower and slower.
Perhaps it's only your imagination, that does
the trick and makes you believe that way?
What kind of a simulation prog. did you use?
Best,
Ami

De: ehydra <ehydra@...>
Para: ferriterodantennaexperimenters@yahoogroups.com
Enviado: jueves, 26 de marzo, 2009 3:10:47
Asunto: Re: [ferriterodantennaexperimenters] Long Ferrite rods

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regards -
Henry

aimo ruoho schrieb:
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> about parallelled ferrites.
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> I have a photo copy of a ring-formed 20 ferrite
> combination, which was tested by some enthusiasts.
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> to see, if it will be any better than my Ccrane...
> Insh Allah!?
> Years go so fast in my 71 past year life, and I have
> so many interesting things to study and do.

>

245. Re: [ferriterodantennaexperimenters] Long Ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2009-04-04 13:52:30 UTC
From: ehydra
Topic: 218 Message: 245

Hello Aimo -

It is/was free FEMM:
http://femm.foster-miller.net/wiki/HomePage

I would like to see a competative ferrite rod antenna instead of a
monopole for shortwave somewhere. But this play is maybe lost??

I think the life is just a dream and true reality is nether really seen.

regards -
Henry

aimo ruoho schrieb:
> Thanks!
> Nice from your part to give your opinion.
> Yes, it was the Russian site photo!
> Very interesting in deed.
> Getting older is getting younger...
> You just feel, that things go faster and faster,
> and you get slower and slower.
> Perhaps it's only your imagination, that does
> the trick and makes you believe that way?
> What kind of a simulation prog. did you use?
> Best,
> Ami
>

--
www.ehydra.dyndns.info

246. Re: [ferriterodantennaexperimenters] Long Ferrite rods

Yahoo group: ferriterodantennaexperimenters
Date: 2009-04-04 14:00:45 UTC
From: ehydra
Topic: 218 Message: 246

> I think the life is just a dream and true reality is nether really seen.
>

"never seen" :-)

--
www.ehydra.dyndns.info

247. Monster ferrite bar antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2009-04-20 18:02:39 UTC
From: salmonguyrep
Topic: 247 Message: 247

I finally had the opportunity to complete the assembly of the giant ferrite bar antenna this past weekend--a project that I wrote about last month. It is made of a 27" ferrite bar (Stormwise), litz wire (Dave Schmarder) a 365 pfd variable capacitor with a built-in 8:1 vernier drive (Crystal Radio Society). The pick up coil is tightly wound at the center of the bar (~ 2" long; 25-30 turns--didn't bother counting) and I positioned the variable capacitor off one end after testing end versus middle of bar positoning and observed no difference in nulls or peakability. The wire wrapped bar was protectively padded using 2" diameter air conditioning tubed insulation, and then inserted into a 2" diameter pvc pipe. It currently lies on a plastic lazy susan but I may move it to a camera tripod so I can rotate it 360 degrees in the x, y, and, and z planes. I can try to send pictures if anyone is interested. The peakable tuning range is 500-1730 kHz.

Preliminary tests have been conducted using the following radios: Sony 2010 and SRF59, Eton E1 (using in the ferrite pick up from the C.Crane double coil amplified antenna--I tried four turns of pick up wire, both on top of the primary coil as well as much closer to the end of the bar opposite the positioning of the varicap--the ferrite pick up did much better than the secondary pick up coil), and the Grundig G6. I also used a 3' x 3' box loop (homebrew) and a ferrite bar antenna (8 Armidon ferrite bars {7.5"} glued together), then fed to a Bax-1 amplifier for direct coupling of the output(also homebrew; made about 25 years ago!).

Preliminary observations: the monster bar is extremely quiet electronically compared to the amplified ferrite bar antenna, and the nulls are much sharper. The overall amplification is a little less, but the peaks are much more narrow--overall it seems to be a considerable improvement over my older ferrite, having more useful S/N ratios and narrower peaks and nulls. The overall amplification is equivalent to the box loop, which has quite broad peaks and nulls in comparison.

The G6 hopelessly overloaded when used with any of the antennas. The monster bar/SRF combination was fantastic, digging audible stations from as far as 300 miles away in the middle of Sunday afternoon. The 2010 and E1 were also chockablock full of signals using either ferrite antenna, with the unamplified monster bar a little less noisy.

I want to compare the monster ferrite/2010 versus amplified ferrite/E1 (direct coupled/Bax-1 amplified) to see if I am missing audible signal in either combination before settling on the monster ferrite as my new favorite, which I will then test using the 2010 versus E1 coupled inductively to see who becomes the new "work horse" combination. I live in Houston, not too far from the Gulf of Mexico. I am looking forward to taking gear down to the beach some evening to see if I can get any TAs using the Sonys and the monster ferrite bar. I also performed one other test: monster ferrite versus Q stick or Selectatenna, neither of which could come close to delivering as much useful signal--so maybe rod size does matter???

Stay tuned!!

248. Re: Monster ferrite bar antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2009-04-21 15:42:07 UTC
From: aircheckclover
Topic: 247 Message: 248

I am reading with interest. Please keep reporting!.

-Mark

==========

--- In ferriterodantennaexperimenters@yahoogroups.com, "salmonguyrep" <rpollock@...> wrote:
>
> I finally had the opportunity to complete the assembly of the giant ferrite bar antenna this past weekend--a project that I wrote about last month. It is made of a 27" ferrite bar (Stormwise), litz wire (Dave Schmarder) a 365 pfd variable capacitor with a built-in 8:1 vernier drive (Crystal Radio Society). The pick up coil is tightly wound at the center of the bar (~ 2" long; 25-30 turns--didn't bother counting) and I positioned the variable capacitor off one end after testing end versus middle of bar positoning and observed no difference in nulls or peakability. The wire wrapped bar was protectively padded using 2" diameter air conditioning tubed insulation, and then inserted into a 2" diameter pvc pipe. It currently lies on a plastic lazy susan but I may move it to a camera tripod so I can rotate it 360 degrees in the x, y, and, and z planes. I can try to send pictures if anyone is interested. The peakable tuning range is 500-1730 kHz.
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> Stay tuned!!
>

249. Re: [ferriterodantennaexperimenters] Monster ferrite bar antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2009-04-21 19:34:30 UTC
From: ehydra
Topic: 247 Message: 249

Good reading!

It would be of interest how such a monster will perform as transmit antenna. Most ferrite antennas are just to small for common transmit power levels and will begin to saturate (-> getting hot -> detune) and amplifying harmonics. For harmonics the antenna rod is a much larger antenna shape and they will be pronounced.
The saturation is a problem very specific to ferrites and one will not see with other antenna types.

One more interesting antenna shape would be a 'ferrite slot antenna'. Here the slot radiates. But how will the ferrite perform?

regards -
Henry

--
www.ehydra.dyndns.info

salmonguyrep schrieb:
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250. RE: [ferriterodantennaexperimenters] Monster ferrite bar antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2009-04-21 20:18:05 UTC
From: Pollock,Raphael E
Topic: 247 Message: 250

I am only a listener, not a transmitter....
From: ferriterodantennaexperimenters@yahoogroups.com
[mailto:ferriterodantennaexperimenters@yahoogroups.com] On Behalf Of ehydra
Sent: Tuesday, April 21, 2009 2:35 PM
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: Re: [ferriterodantennaexperimenters] Monster ferrite bar antenna

Good reading!

It would be of interest how such a monster will perform as transmit
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251. Ferrite Monster Bar Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2009-06-08 20:34:08 UTC
From: salmonguyrep
Topic: 251 Message: 251

Picking up the thread of my earlier emails, the monster ferrite bar antenna works amazingly well. It currently consists of a litz wire wound coil in the center of the bar, a two-turn litz wire pick up coil terminating in a 1/8" jack on one end of the antenna and a 365 pfd variable capacitor located on the other end of the antenna. The entire contraption is packed in air conditioning duct insulation for padding and support, then stuffed into a 30" piece of pvc piping.

I am using the antenna primarily with my Eton E1; the pick up coil results in appreciably better S/N gain compared to a secondary winding on a 4.5" ferrite bar that I used initially, also mounted inside a pvc pipe and terminated in a 1/8" jack off one end as well. I will not jettison this secondary coil, which has been helpful in establishing cardiod nulling patterns on local Houston flame throwers such as 740 and 790, which can be nulled down to inaudible by proper manipulation of the antenna and secondary pick up coil, as per the excellent article about using two loops from the Canadian DX'ers website.

At noon when peaking on signals audible in a high RF environment in central Houston, 550 in Dallas and 870 in Newe Orleans go from inaudible to highly audible S10+ signals. The peaking is very sharp, and it is helpful that the variable capacitor has a built-in 4:1 vernier mechanism. Likewise, both the nulling and rotating for peak reception are very sharp--both functions occur over a 5-10 degree arc of radius, and are much sharper than my older 2 x 2 box loop peaks and nulls, which were extremely broad.

This past weekend I was playing around with an old BAX-1 broadband RF amplifier that I built 20 years ago--it really cranked up the S-meter from S+10 to S+60 on several stations such as 560 in Beaumont. So I am mounting the BAX-1 in a little hobby box and will experiment some to see if I am getting something more than just a higher volume. If so, then I could see using the monster ferrite bar antenna to peak or peak/null a desired signal, then run it through the BAX-1 to see if it improved "copyability".

I have really gone a bit over the top with this project--just ask my wife--she was very indulgent in letting me order a custom built 385 pfd variable capacitor from Jackson Brothers in the U.K.--ceramic insulators, silver coated rotor blades, etc.--65 British Pounds worth of etc.--I will receive this in about a week along with a 10:1 reduction drive, and will replace the current variable capacitor with this item, hopefully to the betterment of tunable Q...

I have not yet taken "my new friend" to the beach in Galveston on the Gulf Coast for some sun set DX--my hope is for TA or at least some interesting Carribean stations--building it has been more than half the fun, and I'll keep you posted...!

252. Re: Monster ferrite bar antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2009-06-10 22:57:23 UTC
From: Adam E.
Topic: 247 Message: 252

Sounds great, but where are the instructions and schematic hook up diagrams, measurements for this project. Also what about the materials needed for this loop antenna project? Is there a website or a ebook, youtube video for this project coming up. All I see is text after text of how it performs compared to other loop antennas. I did not get a chance to build my very own Monster Magnet Antenna.

--- In ferriterodantennaexperimenters@yahoogroups.com, "salmonguyrep" <rpollock@...> wrote:
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> Stay tuned!!
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253. RE: [ferriterodantennaexperimenters] Re: Monster ferrite bar antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2009-06-10 23:11:54 UTC
From: Pollock,Raphael E
Topic: 247 Message: 253

Hi Adam!

Truth be told , there are no instructions or schematic diagrams. I have created this after doing extensive reading on the internet, several NRC reprints, Joe Carr's various handbooks, some of the ultralite dx postings, and a lot of trial and error. I have no formal training in radio engineering or related disciplines, have no measuring equipment, and enjoy the step-by-step experimenting implicit in developing this project. The various supplies used as well as sources can be found in my several email chains of the past several months--sorry if the lack of sources or documentation is a disappointment to you--this is most trial and error, and scavaging parts from my more than 30 years worth of loop antenna and crystal radio building, usually using nothing more than my hands and a Swiss Army knife.

The fun is in the experimenting as much as the new dx retrievable as the final product comes forth. Having said all of this, I would be delighted to answer any specific questions that you or other experiemnters might have...I do not know how to record for Youtube; if sopmeone can teach me then I could perhaps make a video w/ audio of the "monster" in action!
From: ferriterodantennaexperimenters@yahoogroups.com
[mailto:ferriterodantennaexperimenters@yahoogroups.com] On Behalf Of Adam E.
Sent: Wednesday, June 10, 2009 5:57 PM
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: [ferriterodantennaexperimenters] Re: Monster ferrite bar antenna

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254. Re: Monster ferrite bar antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2009-06-11 03:02:35 UTC
From: Adam E.
Topic: 247 Message: 254

Ok, This is very understandable with experimentation with ferrite rods. So what I need to do is get some ferrite rods and try something new? I see where you are coming from. I was just very interested in building one of my own "monster" ferrite antennas for the long wave bands due to being stuck in a apartment complex. I see that you also experimented with the G6 which the G6 has a real bad front end for LW and excellent on MW. Anyways, good luck with
your experiments. :) I will be posting some of my projects soon.

Adam E.

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255. ferrite bar antenna with bnc for am broadcast?

Yahoo group: ferriterodantennaexperimenters
Date: 2009-06-17 20:34:41 UTC
From: richied2003
Topic: 255 Message: 255

Hi all,

new to this group. Does anyone make a ferrite bar antenna tuned for am broadcast with a bnc connector, off the shelf? I am looking for something compact to improve am reception with my yaesu vx-7 and ft-817(or any rig really). I don't want to trade the vx-7 for one of the ht's with built in ferrite bar antennas, but its frustrating when a cheap antique am transistor radio out performs my ham rigs for casual ball game listening while camping:-) If not, any pointers or recommendations on making one easily?

thanks

rich

256. Re: [ferriterodantennaexperimenters] Re: Monster ferrite bar antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2009-06-11 10:07:55 UTC
From: Pollock,Raphael E
Topic: 247 Message: 256

Dear Adam: the key components of my antenna are clearly the 27" ferrite bar from Stormwise @ $90 and the use of Litz wire for primary and pick up coil windings. I didn't know if a shorter bar would have equivalent gain to the 27"er, so I went with the big boy. It tunes from 480-1780 kHz using a primary winding in the center of the bar, tightly wound, about 38 turns. I used some 28 AWG pick up wire to establish the primary coil size and configuration, then replaced it with the mucho more expensive Litz wire windings. Signals that were S3-5 with AWG shot up to S10+ with the equivalent configured primary coil made of Litz. For full coverage of the LW band you would probably need a coil of maybe 100 turns?

Buy the bar, get some wire, and have some experimenting fun--it is a real rush to get that coil peaking just right, after trial and error, all across your band of interest--let me know how your work proceeds!

From: ferriterodantennaexperimenters@yahoogroups.com
<ferriterodantennaexperimenters@yahoogroups.com>
To: ferriterodantennaexperimenters@yahoogroups.com
<ferriterodantennaexperimenters@yahoogroups.com>
Sent: Wed Jun 10 22:02:35 2009
Subject: [ferriterodantennaexperimenters] Re: Monster ferrite bar antenna

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>
>
> Sounds great, but where are the instructions and schematic hook up diagrams, measurements for this project. Also what about the materials needed for this loop antenna project? Is there a website or a ebook, youtube video for this project coming up. All I see is text after text of how it performs compared to other loop antennas. I did not get a chance to build my very own Monster Magnet Antenna.
>
> --- In ferriterodantennaexperimenters@yahoogroups.com<mailto:ferriterodantennaexperimenters%40yahoogroups.com><mailto:ferriterodantennaexperimenters%40yahoogroups.com>, "salmonguyrep" <rpollock@> wrote:
> >
> > I finally had the opportunity to complete the assembly of the giant ferrite bar antenna this past weekend--a project that I wrote about last month. It is made of a 27" ferrite bar (Stormwise), litz wire (Dave Schmarder) a 365 pfd variable capacitor with a built-in 8:1 vernier drive (Crystal Radio Society). The pick up coil is tightly wound at the center of the bar (~ 2" long; 25-30 turns--didn't bother counting) and I positioned the variable capacitor off one end after testing end versus middle of bar positoning and observed no difference in nulls or peakability. The wire wrapped bar was protectively padded using 2" diameter air conditioning tubed insulation, and then inserted into a 2" diameter pvc pipe. It currently lies on a plastic lazy susan but I may move it to a camera tripod so I can rotate it 360 degrees in the x, y, and, and z planes. I can try to send pictures if anyone is interested. The peakable tuning range is 500-1730 kHz.
> >
> > Preliminary tests have been conducted using the following radios: Sony 2010 and SRF59, Eton E1 (using in the ferrite pick up from the C.Crane double coil amplified antenna--I tried four turns of pick up wire, both on top of the primary coil as well as much closer to the end of the bar opposite the positioning of the varicap--the ferrite pick up did much better than the secondary pick up coil), and the Grundig G6. I also used a 3' x 3' box loop (homebrew) and a ferrite bar antenna (8 Armidon ferrite bars {7.5"} glued together), then fed to a Bax-1 amplifier for direct coupling of the output(also homebrew; made about 25 years ago!).
> >
> > Preliminary observations: the monster bar is extremely quiet electronically compared to

the amplified ferrite bar antenna, and the nulls are much sharper. The overall amplification is a little less, but the peaks are much more narrow--overall it seems to be a considerable improvement over my older ferrite, having more useful S/N ratios and narrower peaks and nulls. The overall amplification is equivalent to the box loop, which has quite broad peaks and nulls in comparison.
> >
> > The G6 hopelessly overloaded when used with any of the antennas. The monster bar/SRF combination was fantastic, digging audible stations from as far as 300 miles away in the middle of Sunday afternoon. The 2010 and E1 were also chockablock full of signals using either ferrite antenna, with the unamplified monster bar a little less noisy.
> >
> > I want to compare the monster ferrite/2010 versus amplified ferrite/E1 (direct coupled/Bax-1 amplified) to see if I am missing audible signal in either combination before settling on the monster ferrite as my new favorite, which I will then test using the 2010 versus E1 coupled inductively to see who becomes the new "work horse" combination. I live in Houston, not too far from the Gulf of Mexico. I am looking forward to taking gear down to the beach some evening to see if I can get any TAs using the Sonys and the monster ferrite bar. I also performed one other test: monster ferrite versus Q stick or Selectatenna, neither of which could come close to delivering as much useful signal--so maybe rod size does matter???
> >
> > Stay tuned!!
> >
>

257. Re: ferrite bar antenna with bnc for am broadcast?

Yahoo group: ferriterodantennaexperimenters
Date: 2009-06-22 07:38:41 UTC
From: Hue
Topic: 255 Message: 257

Rich, I certainly wouldl NOT buy a handheld allband scanner type receiver for MW BC reception. I have a IC R-20 and I am appalled at the MW BC reception. Also, I am not thrilled by the handheld concept for any HF frequency either: How are you going to get a low impedance antenna match out of an antenna inches long? It's a bit impractical to walk around with a handheld radio with a 50 foot antenna. -Hue Miller

258. New file uploaded to ferriterodantennaexperimenters

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-08 03:23:44 UTC
From: ferriterodantennaexperimenters@yahoogroup
Topic: 59 Message: 258

Hello,

This email message is a notification to let you know that
a file has been uploaded to the Files area of the ferriterodantennaexperimenters
group.

File : /88-3099.pdf
Uploaded by : gccengineering <gccengineering@...>
Description : LW/MW Antenna Coil Data from Rapid

You can access this file at the URL:
http://groups.yahoo.com/group/ferriterodantennaexperimenters/files/88-3099.pdf

To learn more about file sharing for your group, please visit:
http://help.yahoo.com/l/us/yahoo/groups/original/general.htmlfiles

Regards,

gccengineering <gccengineering@...>

259. Need directions for simple amplifier

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-10 01:41:12 UTC
From: szk71
Topic: 259 Message: 259

Hi all.
I've salvaged an 8" ferrite rod with coils from an older radio. I've optimised the placement of the coils, and with the tuning capacitor salvaged from the same radio, it works nicely on MW. It improved reception when used with my sony ICF-6700G.

Now, I'd like to build myself a simple and quite amplifier for this antenna. Can anyone point some out to me? What gain can be expected? Maybe I can located an amplifier in that same radio, what do I look for?

Also, I'll be using the ferrite antenna on an ICOM R75 that's on the way. These radios have build-it amplifiers, so do I really need to build one?

260. Re: Need directions for simple amplifier

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-11 20:52:05 UTC
From: John Stumm
Topic: 259 Message: 260

Stan,
I've had very good results connecting a long wire and ground to the single winding used to tune the loop. One lead on each end. The stator side of the variable cap to the ground leg will help with stable tuning.
No need for pick-up winding. Experiment with capacitively coupling the ground lead. Just twisting a couple of insulated leads together provides sufficient couling. I used the ground from a 120 volt outlet and it worked very well. The capacitive coupling adds a measure of safety as well. This simple set-up damatically improved the abilities of the simple tuned ferrite loop.

Regards,
John

--- In ferriterodantennaexperimenters@yahoogroups.com, "szk71" <szk71@...> wrote:
>
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>

261. Re: Need directions for simple amplifier

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-11 16:15:25 UTC
From: Steve
Topic: 259 Message: 261

There are some good links in the loopantennas list. Chris Trask just sent us updates to his new pages for some good, low noise amplifiers for loop antennas.

http://groups.yahoo.com/group/loopantennas

Chris's update:
http://groups.yahoo.com/group/loopantennas/message/6629

Steve Greenfield

--- In ferriterodantennaexperimenters@yahoogroups.com, "szk71" <szk71@...> wrote:
>
> Hi all.
> I've salvaged an 8" ferrite rod with coils from an older radio. I've optimised the placement of the coils, and with the tuning capacitor salvaged from the same radio, it works nicely on MW. It improved reception when used with my sony ICF-6700G.
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>

262. RE: [ferriterodantennaexperimenters] Need directions for simple amplifier

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-10 21:34:12 UTC
From: Pollock,Raphael E
Topic: 259 Message: 262

I am using an old BAX-1 one transistor amplifier, built as a kit 15 years ago and not used since construction, mounted in a metal box positoned (wired detachably using plugs and jacks) between my 27" ferrite bar and my Eton E1. S3 increases to S9 and S9 increases to s20-40+. I can't really tell if I am getting true increase in S/N ratio or just increasing both S and N equivalently--have not fully evaluated in an RF freeer environment than indoors at home in Houston...

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Raphael E. Pollock, M.D., Ph.D., F.A.C.S.
Head, Division of Surgery
Professor and Chairman, Department of Surgical Oncology
Senator A.M. Aiken, Jr. Distinguished Chair
1515 Holcombe Blvd, Box 444
Houston, TX 77030
713-792-6928 (Phone)

From: ferriterodantennaexperimenters@yahoogroups.com
[mailto:ferriterodantennaexperimenters@yahoogroups.com] On Behalf Of szk71
Sent: Thursday, July 09, 2009 8:41 PM
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: [ferriterodantennaexperimenters] Need directions for simple amplifier

Hi all.
I've salvaged an 8" ferrite rod with coils from an older radio. I've optimised the placement of the coils, and with the tuning capacitor salvaged from the same radio, it works nicely on MW. It improved reception when used with my sony ICF-6700G.

Now, I'd like to build myself a simple and quite amplifier for this antenna. Can anyone point some out to me? What gain can be expected? Maybe I can located an amplifier in that same radio, what do I look for?

Also, I'll be using the ferrite antenna on an ICOM R75 that's on the way. These radios have build-it amplifiers, so do I really need to build one?

263. Re: Need directions for simple amplifier

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-13 03:11:21 UTC
From: Steve
Topic: 259 Message: 263

Check out the Links section of the loopantennas list. Also see the Files section for "LinkstxtCorrectedToPg4.doc" for a partially updated list of links.

http://groups.yahoo.com/group/loopantennas/links/

http://groups.yahoo.com/group/loopantennas/files/

Steve Greenfield

--- In ferriterodantennaexperimenters@yahoogroups.com, "szk71" <szk71@...> wrote:
>
> Hi all.
> I've salvaged an 8" ferrite rod with coils from an older radio. I've optimised the placement of the coils, and with the tuning capacitor salvaged from the same radio, it works nicely on MW. It improved reception when used with my sony ICF-6700G.
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> Now, I'd like to build myself a simple and quite amplifier for this antenna. Can anyone point some out to me? What gain can be expected? Maybe I can located an amplifier in that same radio, what do I look for?
>
> Also, I'll be using the ferrite antenna on an ICOM R75 that's on the way. These radios have build-it amplifiers, so do I really need to build one?
>

264. Re: Need directions for simple amplifier

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-12 01:01:11 UTC
From: szk71
Topic: 259 Message: 264

--- In ferriterodantennaexperimenters@yahoogroups.com, "John Stumm" <jcstumm@...> wrote:
>
> Stan,
> I've had very good results connecting a long wire and ground to the single winding used to tune the loop. One lead on each end. The stator side of the variable cap to the ground leg will help with stable tuning.
> No need for pick-up winding. Experiment with capacitively coupling the ground lead. Just twisting a couple of insulated leads together provides sufficient couling. I used the ground from a 120 volt outlet and it worked very well. The capacitive coupling adds a measure of safety as well. This simple set-up damatically improved the abilities of the simple tuned ferrite loop.
>
> Regards,
> John

I just tried this. Connected a long wire and a ground to the leads on the tuning coil on the ferrite. It increased gain quite noticably, however, tuning with the capacitor now has very little effect. Any specific reason for this?

265. Re: Need directions for simple amplifier

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-13 21:52:40 UTC
From: John Stumm
Topic: 259 Message: 265

--- In ferriterodantennaexperimenters@yahoogroups.com, "szk71" <szk71@...> wrote:

:

> I just tried this. Connected a long wire and a ground to the leads on the tuning coil on the ferrite. It increased gain quite noticably, however, tuning with the capacitor now has very little effect. Any specific reason for this?
>
Stan,
Assuming you are loosely coupling to ground, i can't see how it might be detuning the resonant range unless some capacitance is being introduced in addition to the tuning cap. The best tuning coils I found used larger diameter coils (>1") employing sufficient windings that various ferrite rods could be centered to effect resonance in the MW band. It is a known fact that the closer the coil is to the rod, the better coil performs - if the coil was functioning by itself, (or tied to an amp.) But now, since the ferrite is of less significance, the longwire, ground and the coil with its proximity to the radio's antenna rod make for the enhanced reception. I've added a pic of one I made and strapped to the rotating rod on my Zenith navigator. Judging from the # of turns, I'd say it was wound to tune the LW band. Also pictured, a couple of pics of my adjustable tuning coil. I made it for use with an amp, but could be employed to use with antenna/ground connections? The coil is split in the middle with the tuning cap introduced there. The outsides of the winding are "bridged" with a jumper. With large dia coil and a large interchangeable monster rod employed, you can use fewer windings. It worked great with my Palomar amp, being able to tune into the SW region as you tapped into fewer windings. Also reduced near field noise. Conventional coil picked up hash from nearby receiver digital readout. Nothing picked up with center tuned. - Stay tuned, i will try it without amp to see how it works in the MW band. To use on SW, a different coupling method would be needed as the radio's ferrite rod is eliminated.

John

266. Re: Need directions for simple amplifier

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-14 13:58:40 UTC
From: aircheckclover
Topic: 259 Message: 266

Hi Rapheal;

The pre-amp will give you stronger S-meter readings but not better S/N (Signal-to-noise ratio) Why? The E1 has plenty of gain - and it has a built-in pre-amp too (the 'DX' button).

A radio buddy explained it to me this way (using non-tech lingo) ... if your radio is sensitive enough to let you hear atmospheric noises, QRM (man-made noises) and the weakest signals produce hiss at or slightly above the noise floor, you have a radio with plenty of gain. Any pre-amp boosting will increases both noise and signal. To increase only signal, you need "more antenna".

The E1 off the whip verses off your 27" ferrite should bear this out ... the E1 hears plenty of various noises on MW when no signal is present. Add "more antenna" - ie, your 27" ferrite and you should hear more stations.

If your 27" ferrite is tuned to resonance, I have a hard time believing it could get much better than that! So maybe you are at maximum S/N already? For about $25 or less you could run a valid test ... get a Terk or one of the Chinese 1 ft MW loops. ((Jay Allen at radiointel.com has run tests on these antennas and they all perform similarly.))

Now run tests ... compare the 1 ft loop to your 27" ferrite. At 12 noon, find a weak station off the E1 whip. Now add your 1 ft loop, noting difference in S/N. Now try the 27" ferrite noting S/N. Keep your eyes closed when determining S/N though. S-meter readings can fool you. The goal is more signal with same or less noise, not just higher S-meter readings. I am betting your 27" ferrite wins the contest hands-down.

Please report back!

Mark

==========

--- In ferriterodantennaexperimenters@yahoogroups.com, "Pollock,Raphael E" <rpollock@...> wrote:
>
> I am using an old BAX-1 one transistor amplifier, built as a kit 15 years ago and not used since construction, mounted in a metal box positoned (wired detachably using plugs and jacks) between my 27" ferrite bar and my Eton E1. S3 increases to S9 and S9 increases to s20-40+. I can't really tell if I am getting true increase in S/N ratio or just increasing both S and N equivalently--have not fully evaluated in an RF freeer environment than indoors at home in Houston...
>
> _____
> Raphael E. Pollock, M.D., Ph.D., F.A.C.S.
> Head, Division of Surgery
> Professor and Chairman, Department of Surgical Oncology

> Senator A.M. Aiken, Jr. Distinguished Chair
> 1515 Holcombe Blvd, Box 444
> Houston, TX 77030
> 713-792-6928 (Phone)
>
> From: ferriterodantennaexperimenters@yahoogroups.com
[mailto:ferriterodantennaexperimenters@yahoogroups.com] On Behalf Of szk71
> Sent: Thursday, July 09, 2009 8:41 PM
> To: ferriterodantennaexperimenters@yahoogroups.com
> Subject: [ferriterodantennaexperimenters] Need directions for simple amplifier
>
>
>
>
>
> Hi all.
> I've salvaged an 8" ferrite rod with coils from an older radio. I've optimised the placement of the coils, and with the tuning capacitor salvaged from the same radio, it works nicely on MW. It improved reception when used with my sony ICF-6700G.
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> Also, I'll be using the ferrite antenna on an ICOM R75 that's on the way. These radios have build-it amplifiers, so do I really need to build one?
>

267. Re: [ferriterodantennaexperimenters] Need directions for simple amplifier

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-13 19:57:19 UTC
From: Paul V Birke PEng
Topic: 259 Message: 267

Dr Doctor

the best amps are the Norton Lossless Amplifiers using one (or 2 in push pull)

Chris Trask is a master of these

attaching to the ferrite core is another thing

the input and output of the Norton is 50 ohms

it can be made with a single transistor and single toroid core

this will enable about a 8 to 14 dB gain with little increase in noise as this is the whole meal deal with this concept

see the patent by David Norton and Chris Trask also holds patents on further improvments

it is simple and very effective

Chris recommends gains no more than about 10dB to get the desired near optimal snr

very best wishes
Ing Paul V Birke VE3PVB

From: "Pollock,Raphael E" <rpollock@...>
To: "ferriterodantennaexperimenters@yahoogroups.com"
<ferriterodantennaexperimenters@yahoogroups.com>
Sent: Friday, July 10, 2009 5:34:12 PM
Subject: RE: [ferriterodantennaexperimenters] Need directions for simple amplifier

I am using an old BAX-1 one transistor amplifier, built as a kit
15 years ago and not used since construction, mounted in a metal box positoned
(wired detachably using plugs and jacks) between my 27" ferrite bar and my
Eton E1. S3 increases to S9 and S9 increases to s20-40+. I can't really tell if
I am getting true increase in S/N ratio or just increasing both S and N
equivalently- -have not fully evaluated in an RF freeer environment than indoors
at home in Houston…

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Sent: Thursday, July 09, 2009 8:41 PM
To: ferriterodantennaex perimenters@ yahoogroups. com
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Also, I'll be using the ferrite antenna on an ICOM R75 that's on the way. These radios have build-it amplifiers, so do I really need to build one?

268. RE: [ferriterodantennaexperimenters] Re: Need directions for simple amplifier

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-14 15:18:45 UTC
From: Pollock,Raphael E
Topic: 259 Message: 268

Dear Mark: Thank you for your thoughts, and they mirror my impressions of the performance of the 27" with versus without amplification. In fact, because of this possibility I did not hard wire the amp between the ferrite bar and the E1. I have not had an opportunity to test the antenna in a low RF environment. Having said that, there might possibly be a very low S reading station that might benefit from some additional volume if only to improve "copyability", so I won't reshelve to BAX-1 just yet. I have done the test you propose below using an unamplified direct coupled Selectatenna and there is no comparison--the direct coupled 27" ferrite tuned to resonance clobbers the Selectatenna tuned to resonance--about 2-3 fold more S (without N) on most stations. Plus the peaks and nulls are much sharper--when tuned and peaked the effect is beautiful quiet signal. The tuning to resonance is so sharp, even with a 4:1 vernier mechanism built into the variable capacitor, that I am thinking of adding an additional 6:1 vernier reduction drive to see if there is an even sharper, nore resolvable peak to be had.

I'll perform the "high noon shoot out" you propose and report back--thanks for the suggestion!

Raph

From: ferriterodantennaexperimenters@yahoogroups.com
[mailto:ferriterodantennaexperimenters@yahoogroups.com] On Behalf Of aircheckclover
Sent: Tuesday, July 14, 2009 8:59 AM
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: [ferriterodantennaexperimenters] Re: Need directions for simple amplifier

Hi Rapheal;

The pre-amp will give you stronger S-meter readings but not better S/N (Signal-to-noise ratio) Why? The E1 has plenty of gain - and it has a built-in pre-amp too (the 'DX' button).

A radio buddy explained it to me this way (using non-tech lingo) ... if your radio is sensitive enough to let you hear atmospheric noises, QRM (man-made noises) and the weakest signals produce hiss at or slightly above the noise floor, you have a radio with plenty of gain. Any pre-amp boosting will increases both noise and signal. To increase only signal, you need "more antenna".

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If your 27" ferrite is tuned to resonance, I have a hard time believing it could get much better than that! So maybe you are at maximum S/N already? For about $25 or less you could run a valid test ... get a Terk or one of the Chinese 1 ft MW loops. ((Jay Allen at radiointel.com has run tests on these antennas and they all perform similarly.))

Now run tests ... compare the 1 ft loop to your 27" ferrite. At 12 noon, find a weak station off the E1 whip. Now add your 1 ft loop, noting difference in S/N. Now try the 27" ferrite noting S/N. Keep your eyes closed when determining S/N though. S-meter readings can fool you. The goal is more signal with same or less noise, not just higher S-meter readings. I am betting your 27" ferrite wins the contest hands-down.

Please report back!

Mark

==========

--- In ferriterodantennaexperimenters@yahoogroups.com<mailto:ferriterodantennaexperimenters%40yahoogroups.com>, "Pollock,Raphael E" <rpollock@...> wrote:
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> I am using an old BAX-1 one transistor amplifier, built as a kit 15 years ago and not used since construction, mounted in a metal box positoned (wired detachably using plugs and jacks) between my 27" ferrite bar and my Eton E1. S3 increases to S9 and S9 increases to s20-40+. I can't really tell if I am getting true increase in S/N ratio or just increasing both S and N equivalently--have not fully evaluated in an RF freeer environment than indoors at home in Houston...
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269. Elevated Ferrite Loop Antenna for NDB DXing?

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-20 09:35:36 UTC
From: Mark
Topic: 269 Message: 269

Hi All,

Just wondering if anyone has any experience with a ferrite loopstick antenna mounted up high. Would elevation bring a big benefit? My application is NDB DXing (longwave).

I've had various E-field antennas mounted above my 2nd story roof and I get lots of interference from the neighboring townhouses. Maybe a tuneable/amplified and rotatable loopstick up there would be an improvement? I can't put a big air loop up (tuned or wideband) due to the homeowner's association restrictions, but a little 8 inch PVC tube and an electric screwdriver rotator might not get noticed.

Mark

270. KA-35 Ferrite Improvement Question

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-21 06:07:15 UTC
From: Adam E.
Topic: 270 Message: 270

I was thinking about what if you take the old ferrite rod antenna off the KA-35 antenna element which is the 4.5 inch length and replaced it with a 7.5 inch ferrite rod on the element. Would it make a huge difference in LW/MW reception? I have not tried it yet, still waiting on getting the 1.0 mH chokes that I need for the antenna controller or get a new one. I may just go on with this after I get a new copy of the KA-35 and keep the 4.5 inch ferrite rod and the second one and use the 1 st copy with the new improved ferrite rod antenna (7.5 inch).

I have known that the superadio III has a real good receiving antenna inside. This 7.5 inch improvement maybe the ticket to best LW/MW reception, and since the amplifier is designed at 30 kHz to 3 MHz the 7.5 inch ferrite compared to the original 4.5 inch ferrite will do better cause its a higher inductance and higher Q.

Adam E.

gccengineering

271. Re: Elevated Ferrite Loop Antenna for NDB DXing?

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-21 18:13:58 UTC
From: aircheckclover
Topic: 269 Message: 271

Mark - roughly speaking an 8 " wound ferrite will have performance similar to a 1 ft open loop. I can't say an 16" in ferrite will equal a 2 ft loop but there is a parallel relationship between the two with the ferrite giving you similar signal capture in a smaller space. That said, both the ferrite and the open loop have figure-8 directionality. Either antenna may allow you to tune out interference, but not always. EX: If you have noise emanating from two townhouses - one to the north and one to the south, you could tune out the noise by orienting your antenna 90 degrees from the noise sources. But if you have noise coming at you from a house to the north and also from the west (90 degrees apart) it will be hard to tune out the noise. Yes, at 45 degrees you will find some relief but not 100% and the amount of relief this will be dependent on how tight the nulls of your antenna are. And that gets in to construction techniques and material choices. Rule of thumb here: the more you spend, the better the nulls.

As for higher or lower elevations - I doubt for LW height matters all that much. In fact, I am getting my best BCB DX results in the basement, 8 feet underground. At least for groundwave (daytime) signals.

Wonder if anyone else has thoughts/observations on this? My feelings will not be hurt if I am wrong.

Mark

==========

--- In ferriterodantennaexperimenters@yahoogroups.com, "Mark" <renderdog7@...> wrote:
>
> Hi All,
>
> Just wondering if anyone has any experience with a ferrite loopstick antenna mounted up high. Would elevation bring a big benefit? My application is NDB DXing (longwave).
>
> I've had various E-field antennas mounted above my 2nd story roof and I get lots of interference from the neighboring townhouses. Maybe a tuneable/amplified and rotatable loopstick up there would be an improvement? I can't put a big air loop up (tuned or wideband) due to the homeowner's association restrictions, but a little 8 inch PVC tube and an electric screwdriver rotator might not get noticed.
>
> Mark
>

272. Re: Monster ferrite bar antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-25 18:49:25 UTC
From: John Stumm
Topic: 247 Message: 272

Adam,
I found a good source for the ferrite beads that appear to be the same ones that Stormwise, myself and others have used in assembling monster rods. Our company is in the process of replacing all of our old CRT displays with LCDs. Each old display employs a bead on the computer cable. They are molded in a vinyl sleeve but are easily retrieved. They can come in various sizes but the ones i gleened slip nicely in thin walled 1/2" PVC, (11/16" X 1 1/8" ea). I have put together enough for a 1 footer so far.

Also, Stormwise used to have a lot of cool plans for things that employ their monster rods. They deleated them all in favor of selling ready-to-go assemblies. I have hard copies of several if anyone is interested.

John
--- In ferriterodantennaexperimenters@yahoogroups.com, "Adam E." <gccengineering@...>
wrote:
>
> Ok, This is very understandable with experimentation with ferrite rods. So what I need to do is get some ferrite rods and try something new? I see where you are coming from. I was just very interested in building one of my own "monster" ferrite antennas for the long wave bands due to being stuck in a apartment complex. I see that you also experimented with the G6 which the G6 has a real bad front end for LW and excellent on MW. Anyways, good luck with
> your experiments. :) I will be posting some of my projects soon.
>
> Adam E.
>
>
>
>
> --- In ferriterodantennaexperimenters@yahoogroups.com, "Pollock,Raphael E" <rpollock@>
wrote:
> >
> >
> > Hi Adam!
> >
> > Truth be told , there are no instructions or schematic diagrams. I have created this after doing extensive reading on the internet, several NRC reprints, Joe Carr's various handbooks, some of the ultralite dx postings, and a lot of trial and error. I have no formal training in radio engineering or related disciplines, have no measuring equipment, and enjoy the step-by-step experimenting implicit in developing this project. The various supplies used as well as sources can be found in my several email chains of the past several months--sorry if the lack of sources or documentation is a disappointment to you--this is most trial and error, and scavaging parts from my more than 30 years worth of loop antenna and crystal radio building, usually using nothing more than my hands and a Swiss Army knife.

> >
>

273. Re: [ferriterodantennaexperimenters] Re: Monster ferrite bar antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-25 19:35:30 UTC
From: Pollock,Raphael E
Topic: 247 Message: 273

Dear John: I am wondering which plans you have from Stormwise--I would love to get copies if possible...!

Thanks;
Raph Pollock

_____
From: ferriterodantennaexperimenters@yahoogroups.com
<ferriterodantennaexperimenters@yahoogroups.com>
To: ferriterodantennaexperimenters@yahoogroups.com
<ferriterodantennaexperimenters@yahoogroups.com>
Sent: Sat Jul 25 13:49:25 2009
Subject: [ferriterodantennaexperimenters] Re: Monster ferrite bar antenna

Adam,
I found a good source for the ferrite beads that appear to be the same ones that Stormwise, myself and others have used in assembling monster rods. Our company is in the process of replacing all of our old CRT displays with LCDs. Each old display employs a bead on the computer cable. They are molded in a vinyl sleeve but are easily retrieved. They can come in various sizes but the ones i gleened slip nicely in thin walled 1/2" PVC, (11/16" X 1 1/8" ea). I have put together enough for a 1 footer so far.

Also, Stormwise used to have a lot of cool plans for things that employ their monster rods. They deleated them all in favor of selling ready-to-go assemblies. I have hard copies of several if anyone is interested.

John
--- In ferriterodantennaexperimenters@yahoogroups.com<mailto:ferriterodantennaexperimenters%40yahoogroups.com>, "Adam E." <gccengineering@...> wrote:
>
> Ok, This is very understandable with experimentation with ferrite rods. So what I need to do is get some ferrite rods and try something new? I see where you are coming from. I was just very interested in building one of my own "monster" ferrite antennas for the long wave bands due to being stuck in a apartment complex. I see that you also experimented with the G6 which the G6 has a real bad front end for LW and excellent on MW. Anyways, good luck with
> your experiments. :) I will be posting some of my projects soon.
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> Adam E.
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> --- In ferriterodantennaexperimenters@yahoogroups.com<mailto:ferriterodantennaexperimenters%40yahoogroups.com>, "Pollock,Raphael E" <rpollock@> wrote:
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> >
> > Hi Adam!
> >
> > Truth be told , there are no instructions or schematic diagrams. I have created this after doing extensive reading on the internet, several NRC reprints, Joe Carr's various handbooks, some of the ultralite dx postings, and a lot of trial and error. I have no formal training in radio engineering or related disciplines, have no measuring equipment, and enjoy the step-by-step experimenting implicit in developing this project. The various supplies used as well as sources can be found in my several email chains of the past several months--sorry if the lack of sources or documentation is a disappointment to you--this is most trial and error, and scavaging parts from my more than 30 years worth of loop antenna and crystal radio building, usually using nothing more than my hands and a Swiss Army knife.
> >
>

274. Re: Monster ferrite bar antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-27 01:53:31 UTC
From: John Stumm
Topic: 247 Message: 274

Raph
I have plans for incorporating their monster rods to make AM/longwave booster, wideband long range VLF whistler receiver and a nifty and simple converter circuit that detects ELF signals and uses them to modulate a white noise generator to be picked up on an FM or shotwave radio. The two active components are 2N3904's. One is used as an amp. The other, the B/C are shorted and, when installed backwards, generates a hissing noise. Supposed to be very sensitive. I'm suprised I haven't built one yet. Let me know where to send copies of all or the ones of interest to you. I could post the ELF up converter circuit if there's more interest. I've got reservations about scanning and posting their stuff though...

John

> Dear John: I am wondering which plans you have from Stormwise--I would love to get copies if possible...!
>
> Thanks;
> Raph Pollock
>
> _____
> From: ferriterodantennaexperimenters@yahoogroups.com
<ferriterodantennaexperimenters@yahoogroups.com>
> To: ferriterodantennaexperimenters@yahoogroups.com
<ferriterodantennaexperimenters@yahoogroups.com>
> Sent: Sat Jul 25 13:49:25 2009
> Subject: [ferriterodantennaexperimenters] Re: Monster ferrite bar antenna
>
>
>
> Adam,
> I found a good source for the ferrite beads that appear to be the same ones that Stormwise, myself and others have used in assembling monster rods. Our company is in the process of replacing all of our old CRT displays with LCDs. Each old display employs a bead on the computer cable. They are molded in a vinyl sleeve but are easily retrieved. They can come in various sizes but the ones i gleened slip nicely in thin walled 1/2" PVC, (11/16" X 1 1/8" ea). I have put together enough for a 1 footer so far.
>
> Also, Stormwise used to have a lot of cool plans for things that employ their monster rods. They deleated them all in favor of selling ready-to-go assemblies. I have hard copies of several if anyone is interested.
>
> John

275. Re: [ferriterodantennaexperimenters] Re: Monster ferrite bar antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-28 22:04:50 UTC
From: aimo ruoho
Topic: 247 Message: 275

Thanks for awaking my interest, too, John!

I have been trying to build "Monster Ferrite Rods"
for some time now, but would like to get better
results.

Would you like to send the Information (hard copies)
you told about for me to study it?

Aimo Ruoho,
aimounto@...

Thanks and Best Regards to you and yours.

Aimo

--- El sáb, 25/7/09, John Stumm <jcstumm@...> escribió:

De: John Stumm <jcstumm@...>
Asunto

276. Re: Monster ferrite bar antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-27 07:39:44 UTC
From: Adrian James Flynn
Topic: 247 Message: 276

Hello John,
I would like to get copies of those plans also if at all possible.
Thanks,
Adrian Flynn

--- In ferriterodantennaexperimenters@yahoogroups.com, "John Stumm" <jcstumm@...> wrote:
>
> Raph
> I have plans for incorporating their monster rods to make AM/longwave booster, wideband long range VLF whistler receiver and a nifty and simple converter circuit that detects ELF signals and uses them to modulate a white noise generator to be picked up on an FM or shotwave radio. The two active components are 2N3904's. One is used as an amp. The other, the B/C are shorted and, when installed backwards, generates a hissing noise. Supposed to be very sensitive. I'm suprised I haven't built one yet. Let me know where to send copies of all or the ones of interest to you. I could post the ELF up converter circuit if there's more interest. I've got reservations about scanning and posting their stuff though...
>
> John
>
>
> > Dear John: I am wondering which plans you have from Stormwise--I would love to get copies if possible...!
> >
> > Thanks;
> > Raph Pollock
> >
> > _____
> > From: ferriterodantennaexperimenters@yahoogroups.com <ferriterodantennaexperimenters@yahoogroups.com>
> > To: ferriterodantennaexperimenters@yahoogroups.com <ferriterodantennaexperimenters@yahoogroups.com>
> > Sent: Sat Jul 25 13:49:25 2009
> > Subject: [ferriterodantennaexperimenters] Re: Monster ferrite bar antenna
> >
> >
> >
> > Adam,
> > I found a good source for the ferrite beads that appear to be the same ones that Stormwise, myself and others have used in assembling monster rods. Our company is in the process of replacing all of our old CRT displays with LCDs. Each old display employs a bead on the computer cable. They are molded in a vinyl sleeve but are easily retrieved. They can come in various sizes but the ones i gleened slip nicely in thin walled 1/2" PVC, (11/16" X 1 1/8" ea). I have put together enough for a 1 footer so far.
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> > Also, Stormwise used to have a lot of cool plans for things that employ their monster

rods. They deleated them all in favor of selling ready-to-go assemblies. I have hard copies of several if anyone is interested.
> >
> > John
>

277. Re: [ferriterodantennaexperimenters] Elevated Ferrite Loop Antenna for NDB DXing?

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-27 21:42:15 UTC
From: aimo ruoho
Topic: 269 Message: 277

Thanks for encouraging, Mark!

You just go ahead and do it!
I think, it is a good idea, and some day soon
I am going to put my own long ferrite stick up, too.

Best Regards and thanks again!

Aimo

--- El lun, 20/7/09, Mark <renderdog7@...> escribió:

De: Mark <renderdog7@yahoo.com>
Asunto: [ferriterodantennaexperimenters] Elevated Ferrite Loop Antenna for NDB DXing?
Para: ferriterodantennaexperimenters@yahoogroups.com
Fecha: lunes, 20 julio, 2009 11:35

Hi All,

Just wondering if anyone has any experience with a ferrite loopstick antenna mounted up high. Would elevation bring a big benefit? My application is NDB DXing (longwave).

I've had various E-field antennas mounted above my 2nd story roof and I get lots of interference from the neighboring townhouses. Maybe a tuneable/amplified and rotatable loopstick up there would be an improvement? I can't put a big air loop up (tuned or wideband) due to the homeowner's association restrictions, but a little 8 inch PVC tube and an electric screwdriver rotator might not get noticed.

Mark

278. RE: [ferriterodantennaexperimenters] Re: Monster ferrite bar antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-27 14:20:41 UTC
From: Pollock,Raphael E
Topic: 247 Message: 278

Dear John: Thank you very much for your offer to send me Stormwise plans. The one I am interested in is the AM/LW booster. I have the Stormwise 27" monster ferrite bar, and so I would be very curious to see how their design compares to what I put together through experimentation. I you would like I would be happy to send you a self addressed and stamped envelope, or perhaps you could either copy and send me the booster plan to me at the address below or consider emailing it to me with the proviso that I would promise to delete the email upon receipt without forwarding to any other person or website?

Thank you for your generous help!

Raph Pollock

_____
Raphael E. Pollock, M.D., Ph.D., F.A.C.S.
Head, Division of Surgery
Professor and Chairman, Department of Surgical Oncology
Senator A.M. Aiken, Jr. Distinguished Chair
1515 Holcombe Blvd, Box 444
Houston, TX 77030
713-792-6928 (Phone)

From: ferriterodantennaexperimenters@yahoogroups.com
[mailto:ferriterodantennaexperimenters@yahoogroups.com] On Behalf Of John Stumm
Sent: Sunday, July 26, 2009 8:54 PM
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: [ferriterodantennaexperimenters] Re: Monster ferrite bar antenna

Raph
I have plans for incorporating their monster rods to make AM/longwave booster, wideband long range VLF whistler receiver and a nifty and simple converter circuit that detects ELF signals and uses them to modulate a white noise generator to be picked up on an FM or shotwave radio. The two active components are 2N3904's. One is used as an amp. The other, the B/C are shorted and, when installed backwards, generates a hissing noise. Supposed to be very sensitive. I'm suprised I haven't built one yet. Let me know where to send copies of all or the ones of interest to you. I could post the ELF up converter circuit if there's more interest. I've got reservations about scanning and posting their stuff though...

John

> Dear John: I am wondering which plans you have from Stormwise--I would love to get copies if possible...!
>
> Thanks;
> Raph Pollock
>
> _____
> From: ferriterodantennaexperimenters@yahoogroups.com<mailto:ferriterodantennaexperimente

rs%40yahoogroups.com> <ferriterodantennaexperimenters@yahoogroups.com<mailto:ferriterodantennaexperimenters%40yahoogroups.com>>
> To: ferriterodantennaexperimenters@yahoogroups.com<mailto:ferriterodantennaexperimenters%40yahoogroups.com> <ferriterodantennaexperimenters@yahoogroups.com<mailto:ferriterodantennaexperimenters%40yahoogroups.com>>
> Sent: Sat Jul 25 13:49:25 2009
> Subject: [ferriterodantennaexperimenters] Re: Monster ferrite bar antenna
>
>
>
> Adam,
> I found a good source for the ferrite beads that appear to be the same ones that Stormwise, myself and others have used in assembling monster rods. Our company is in the process of replacing all of our old CRT displays with LCDs. Each old display employs a bead on the computer cable. They are molded in a vinyl sleeve but are easily retrieved. They can come in various sizes but the ones i gleened slip nicely in thin walled 1/2" PVC, (11/16" X 1 1/8" ea). I have put together enough for a 1 footer so far.
>
> Also, Stormwise used to have a lot of cool plans for things that employ their monster rods. They deleated them all in favor of selling ready-to-go assemblies. I have hard copies of several if anyone is interested.
>
> John

279. RE: [ferriterodantennaexperimenters] Re: Monster ferrite bar antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-29 20:49:59 UTC
From: Pollock,Raphael E
Topic: 247 Message: 279

Hi John!

Any chance that I might get a copy of the Stormwise plan for the AM/longwave booster? I would be happy to receive in any manner, including sending you a SASE...So many thanks!

Raph Pollock

_____
Raphael E. Pollock, M.D., Ph.D., F.A.C.S.
Head, Division of Surgery
Professor and Chairman, Department of Surgical Oncology
Senator A.M. Aiken, Jr. Distinguished Chair
1515 Holcombe Blvd, Box 444
Houston, TX 77030
713-792-6928 (Phone)

From: ferriterodantennaexperimenters@yahoogroups.com
[mailto:ferriterodantennaexperimenters@yahoogroups.com] On Behalf Of John Stumm
Sent: Sunday, July 26, 2009 8:54 PM
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: [ferriterodantennaexperimenters] Re: Monster ferrite bar antenna

Raph
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John

> Dear John: I am wondering which plans you have from Stormwise--I would love to get copies if possible...!
>
> Thanks;
> Raph Pollock
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> _____
> From: ferriterodantennaexperimenters@yahoogroups.com<mailto:ferriterodantennaexperimenters%40yahoogroups.com> <ferriterodantennaexperimenters@yahoogroups.com<mailto:ferriterodantennaexperimenters%40yahoogroups.com>>
> To: ferriterodantennaexperimenters@yahoogroups.com<mailto:ferriterodantennaexperimenters%40yahoogroups.com> <ferriterodantennaexperimenters@yahoogroups.com<mailto:ferriterodantennaexperimenters%40yahoogroups.com>>

> Sent: Sat Jul 25 13:49:25 2009
> Subject: [ferriterodantennaexperimenters] Re: Monster ferrite bar antenna
>
>
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> Also, Stormwise used to have a lot of cool plans for things that employ their monster rods. They deleated them all in favor of selling ready-to-go assemblies. I have hard copies of several if anyone is interested.
>
> John

280. Re: Monster ferrite bar antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-30 09:54:08 UTC
From: i2NDT Claudio
Topic: 247 Message: 280

John,
I am interested as well in plans for a MW/LW antenna...

Thanks and good DX
de
i2NDT Claudio

--- In ferriterodantennaexperimenters@yahoogroups.com, "John Stumm" <jcstumm@...> wrote:
>
> Raph
> I have plans for incorporating their monster rods to make AM/longwave booster, wideband long range VLF whistler receiver and a nifty and simple converter circuit that detects ELF signals and uses them to modulate a white noise generator to be picked up on an FM or shotwave radio. The two active components are 2N3904's. One is used as an amp. The other, the B/C are shorted and, when installed backwards, generates a hissing noise. Supposed to be very sensitive. I'm suprised I haven't built one yet. Let me know where to send copies of all or the ones of interest to you. I could post the ELF up converter circuit if there's more interest. I've got reservations about scanning and posting their stuff though...
>
> John
>
>
> > Dear John: I am wondering which plans you have from Stormwise--I would love to get copies if possible...!
> >
> > Thanks;
> > Raph Pollock
> >

281. Re: Monster ferrite bar antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-30 14:43:50 UTC
From: John Stumm
Topic: 247 Message: 281

Hello Raph,
Due to a number of others showing interest in AM/long-wave booster plans, I will go ahead and scan them into the fils section. As I've never done anything similar aside from pictures, hopefully it works. I've placed an extensive # of hi res pics in the files section, (loopantennas group) so I know it can be done. I will do tonight. There's only a couple of docs that actually state that they are protected. They have to do with VLF receiver projects. If there's any interest in those, I could send out individually.

73

John
--- In ferriterodantennaexperimenters@yahoogroups.com, "Pollock,Raphael E" <rpollock@...> wrote:
>
> Hi John!
>
> Any chance that I might get a copy of the Stormwise plan for the AM/longwave booster? I would be happy to receive in any manner, including sending you a SASE...So many thanks!
>
> Raph Pollock

282. AM/LW booster shemes added to files

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-31 01:49:17 UTC
From: John Stumm
Topic: 282 Message: 282

I have placed the old stormwise booster ideas in a files folder.
Also included a balanced loop reposted from the old ferrite rod antenna group. Not sure who to credit much less how well it works! Everything else I have (ELF up-converter and VLF circuits) is copywrite protected. I'm guessing they could be made available to interested individuals with proviso.

73
John
KG6ZBN

283. RE: [ferriterodantennaexperimenters] Re: Monster ferrite bar antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-30 15:20:23 UTC
From: Pollock,Raphael E
Topic: 247 Message: 283

Dear John: I am very grateful to you for your willingness to create the desired download. I currently have the 27" Stormwise 125 pfd ferrite bar center wound (38 turns) with Litz wire and a four turn (Litz wire) inductive secondary winding which goes to a 365 pfd variable capacitor. The bar and wire wraps are inserted into air conditioner extruded foam insulation padding and the entire wrapped bar has been placed inside a 2" diameter PVC pipe. The variable capacitor is placed off of one end of the pipe but inside the pipe; the secondary winding terminates into a 1/8" jack (female) off the other end of the pipe. The variable capacitor has a built in 4:1 vernier reduction drive (Midnight Science) which is very helpful in tuning the antenna to resonance given the sharp Q and sharp nulls. The antenna alternates between being strapped to a standard camera tripod versus a simple wood carrier box (open ended) mounted on four casters--the former for when I am sitting in an easy chair or lying in bed and the latter for when I am sitting at a table, where the advantage of the tripod is that I can tilt the rod. I put a one transistor BAX-1 broad band RF amplifier, built from a kit 15 years ago, into an aluminum hobby box for shielding purposes, and can pulg it in between the antenna output and my Eton E-1 receiver. While it amplifies some stations in a manner that improves their audibility, I am still not convined that it is helping with S/N ratios as compared to simply amplifying both S and N. I ordered a 365 pfd variable capaciotr from Jackson Bros. in England, thinking that were there any losses from the current variable capacitor that this might help. However, the Jackson Bros. part does not fit inside the 2" diameter of the PVC piping, and I like the fact that what i have now does, for ease in safe transporting later if i can find the time to go to a low RF environment given that I live in the middle of Houston in a home with the usual RF culprits all around.

Like all of us, I will continue to look for ways to enhance performance for AM dxing. I originally built the antenna to provide directional pick up for the E1 which lacks an internal ferrite bar antenna. I also have a Sony 2010 and will start making comparisons between the two radios and between inductive, direct passive, and direct amplified pick up using the 2010. I also have a 3' x 3' home brew air core loop and will do some experimenting using the ferrite and the air core, looking also at cardioid pick up possibilities with the 2010.

A long winded update on my activities, hence my interest in seeing what Stormwise had in mind for their own AM/LW booster system!

Thanks again...

Raph

_____
From: ferriterodantennaexperimenters@yahoogroups.com
[ferriterodantennaexperimenters@yahoogroups.com] On Behalf Of John Stumm [jcstumm@...]
Sent: Thursday, July 30, 2009 9:43 AM
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: [ferriterodantennaexperimenters] Re: Monster ferrite bar antenna

Hello Raph,
Due to a number of others showing interest in AM/long-wave booster plans, I will go ahead and scan them into the fils section. As I've never done anything similar aside from pictures, hopefully it works. I've placed an extensive # of hi res pics in the files section, (loopantennas group) so I know it can be done. I will do tonight. There's only a couple of docs that actually state that they are protected. They have to do with VLF receiver projects. If there's any interest in those, I could send out individually.

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> Hi John!
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> Any chance that I might get a copy of the Stormwise plan for the AM/longwave booster? I would be happy to receive in any manner, including sending you a SASE...So many thanks!
>
> Raph Pollock

284. Re: [ferriterodantennaexperimenters] Re: Elevated Ferrite Loop Antenna for NDB DXing?

Yahoo group: ferriterodantennaexperimenters
Date: 2009-07-22 23:50:07 UTC
From: huelbe_garcia@fastimap.com
Topic: 269 Message: 284

Hello,

elevation vs propagation has been a old question for a 85-year-old friend of mine and me. This friend (an ex-WW 2airplane mechanic and former radio technician) thinks elevation plays an important role as he believes airplanes can tune very distant, ground wave signals with very modest ferrite antennas.

The NDB/VOR coverage was poor in my country (Brazil) up to 40 years ago. At the time, airplanes depended heavily on AM/MW stations for navigation. Radio station had to id theirselves every 15 minutes (by law!)My friend says they were able to tune stations far 600 ml /1000 km during the day. That's why he believes altitude can help on LF/MF.

If someone has friendly contact with a pilot or flight company (I wish I had one :) I would suggest asking them their experience with LF beacons in air.

:)

Huelbe.

----- Original Message -----
From: aircheck1over
To: ferriterodantennaexperimenters@yahoogroups.com
Sent: Tuesday, July 21, 2009 3:13 PM
Subject: [ferriterodantennaexperimenters] Re: Elevated Ferrite Loop Antenna for NDB DXing?

Mark - roughly speaking an 8 " wound ferrite will have performance similar to a 1 ft open loop. I can't say an 16" in ferrite will equal a 2 ft loop but there is a parallel relationship between the two with the ferrite giving you similar signal capture in a smaller space. That said, both the ferrite and the open loop have figure-8 directionality. Either antenna may allow you to tune out interference, but not always. EX: If you have noise emanating from two townhouses - one to the north and one to the south, you could tune out the noise by orienting your antenna 90 degrees from the noise sources. But if you have noise coming at you from a house to the north and also from the west (90 degrees apart) it will be hard to tune out the noise. Yes, at 45 degrees you will find some relief but not 100% and the amount of relief this will be dependent on how tight the nulls of your antenna are. And that gets in to construction techniques and material choi ces. Rule of thumb here: the more you spend, the better the nulls.

As for higher or lower elevations - I doubt for LW height matters all that much. In fact, I am getting my best BCB DX results in the basement, 8 feet underground. At least for groundwave (daytime) signals.

Wonder if anyone else has thoughts/observations on this? My feelings will not be hurt if I am wrong.

Mark

==========

--- In ferriterodantennaexperimenters@yahoogroups.com, "Mark" <renderdog7@...> wrote:
>
> Hi All,
>
> Just wondering if anyone has any experience with a ferrite loopstick antenna mounted up high. Would elevation bring a big benefit? My application is NDB DXing (longwave).
>
> I've had various E-field antennas mounted above my 2nd story roof and I get lots of interference from the neighboring townhouses. Maybe a tuneable/amplified and rotatable loopstick up there would be an improvement? I can't put a big air loop up (tuned or wideband) due to the homeowner's association restrictions, but a little 8 inch PVC tube and an electric screwdriver rotator might not get noticed.
>
> Mark
>

285. Re: Monster ferrite bar antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2009-08-01 01:51:09 UTC
From: John Stumm
Topic: 247 Message: 285

Raph,
Glad to oblige you, as well as the others that can find them useful.
I think my first amplified ferrite project,(the Ramsey Signal magnet was my favorite. Firstly, because I built it from kit and learned alot about shielded loops. Secondly, it was easily modified to use larger shielded rods. Thirdly, the loop could be remotely located and still tuned locally. I also added portability using 3-9 volt batteries. This allowed me to mount the loop in my truck bed and drive, while monitoring a 100 mw test signal I was generating off a base loaded CB whip. Tuned to a vacant 1700 khz, I drove, stopped repeatedly, checking for the signal until I could barely hear it. I checked the odometer, I was 10 miles out! What more, There were high tension lines adjacent to where I was. I was using a RS DX-392 because it was easily coupled to using ext. ant. input plus I like its S-meter. The Palomar and Quantum came later but, the most fun for me came with the Ramsey. I think they still offer it? There are those who down-play them as gimickry. I thought they were quite sensitive with a bigger loop head, See mine in the loopantennas group files section. John's loop-da-jour. Happy DXing!
73
John

>
> Dear John: I am very grateful to you for your willingness to create the desired download. I currently have the 27" Stormwise 125 pfd ferrite bar center wound (38 turns) with Litz wire and a four turn (Litz wire) inductive secondary winding which goes to a 365 pfd variable capacitor. The bar and wire wraps are inserted into air conditioner extruded foam insulation padding and the entire wrapped bar has been placed inside a 2" diameter PVC pipe. The variable capacitor is placed off of one end of the pipe but inside the pipe; the secondary winding terminates into a 1/8" jack (female) off the other end of the pipe. The variable capacitor has a built in 4:1 vernier reduction drive (Midnight Science) which is very helpful in tuning the antenna to resonance given the sharp Q and sharp nulls. The antenna alternates between being strapped to a standard camera tripod versus a simple wood carrier box (open ended) mounted on four casters--the former for when I am sitting in an easy chair or lying in bed and the latter for when I am sitting at a table, where the advantage of the tripod is that I can tilt the rod. I put a one transistor BAX-1 broad band RF amplifier, built from a kit 15 years ago, into an aluminum hobby box for shielding purposes, and can pulg it in between the antenna output and my Eton E-1 receiver. While it amplifies some stations in a manner that improves their audibility, I am still not convined that it is helping with S/N ratios as compared to simply amplifying both S and N. I ordered a 365 pfd variable capaciotr from Jackson Bros. in England, thinking that were there any losses from the current variable capacitor that this might help. However, the Jackson Bros. part does not fit inside the 2" diameter of the PVC piping, and I like the fact that what i have now does, for ease in safe transporting later if i can find the time to go to a low RF environment given that I live in the middle of Houston in a home with the usual RF culprits all around.
>
> Like all of us, I will continue to look for ways to enhance performance for AM dxing. I originally built the antenna to provide directional pick up for the E1 which lacks an

internal ferrite bar antenna. I also have a Sony 2010 and will start making comparisons between the two radios and between inductive, direct passive, and direct amplified pick up using the 2010. I also have a 3' x 3' home brew air core loop and will do some experimenting using the ferrite and the air core, looking also at cardioid pick up possibilities with the 2010.
>
> A long winded update on my activities, hence my interest in seeing what Stormwise had in mind for their own AM/LW booster system!
>
> Thanks again...
>
> Raph
> _____

286. Ferrite impeder rods made fro pipe welding

Yahoo group: ferriterodantennaexperimenters
Date: 2009-08-10 01:25:13 UTC
From: John Popelish
Topic: 286 Message: 286

There are a bunch od cases of different sizes of ferrite rods on eBay, right now, that were made to be used in the manufacture of welded steel pipe. So they are high flux, medium frequency material (permeability falling off in the hundreds of kilohertz. power ferrite. So they wouldn't work very well for the broadcast band and above, but should work well below that band, including WWVB 60 kHz stuff.

All sizes are 200mm (about 8 inches) long, in a range of diameters from 10mm to 18mm. The cases contain different number of rods for different diameter, but most cost about $150 to $200 per case for 48 to 150 rods.

I am thinking of buying a case of one size (yet to be selected) and can't justify the cost or ever use a full case. So I am asking if anyone might be interested in buying some from me, at my cost. I estimate a per rod delivered cost in the $2 to $4 range (depending on size) by US mail.

I am also open to suggestions as to the best diameter for or uses. If you want to keep your interest or contact info confidential, you may email me at jpopelish@... or through the email function on the group web page. But a little public discussion might be useful, first. Anybody interested? I live in the U.S., so shipping will be most reasonable to people in the U.S.

--
Regards,

John Popelish

287. Re: Ferrite impeder rods made fro pipe welding

Yahoo group: ferriterodantennaexperimenters
Date: 2009-08-10 04:51:04 UTC
From: John Stumm
Topic: 286 Message: 287

Hi John.
I could go for 20=25% if you decide to proceed with the purchase.
As far as useful diameters, I would be be bundling them anyway, so I'd use whatever number it required to make a 1" or so diameter rod.
I just did that with a bunch of beads to make one about 1-1/4" by - only 10". Do you think adding girth while sacrificing length would make sense? We're talking work in low VLF/ELF region. I'm figuring go big both ways! (hence my interest in bushel (or maybe a peck).
So, 4 X 8" = 24" rod length, then times # needed in the bundle. I'm thinking 8. 1 central rod surrounded by 7. I've bundled 5/16" carbon rods to fit in 1" thin wall PVC, (Chemalloy battery) so if the rod diameters are similar, we should good going with a total of 32.
We're looking for a real Mongo here...
So, if it is a go, hopefully they'd be closer to the 2 dollar range ;>)

Thanks,

John

>
> There are a bunch od cases of different sizes of ferrite rods on eBay, right now, that were made to be used in the manufacture of welded steel pipe. So they are high flux, medium frequency material (permeability falling off in the hundreds of kilohertz. power ferrite. So they wouldn't work very well for the broadcast band and above, but should work well below that band, including WWVB 60 kHz stuff.
>
> All sizes are 200mm (about 8 inches) long, in a range of diameters from 10mm to 18mm. The cases contain different number of rods for different diameter, but most cost about $150 to $200 per case for 48 to 150 rods.
>
> I am thinking of buying a case of one size (yet to be selected) and can't justify the cost or ever use a full case. So I am asking if anyone might be interested in buying some from me, at my cost. I estimate a per rod delivered cost in the $2 to $4 range (depending on size) by US mail.
>
> I am also open to suggestions as to the best diameter for or uses. If you want to keep your interest or contact info confidential, you may email me at jpopelish@... or through the email function on the group web page. But a little public discussion might be useful, first. Anybody interested? I live in the U.S., so shipping will be most reasonable to people in the U.S.
>
> --
> Regards,
>
> John Popelish
>

288. Re: Ferrite impeder rods made fro pipe welding

Yahoo group: ferriterodantennaexperimenters
Date: 2009-08-10 05:00:09 UTC
From: John Stumm
Topic: 286 Message: 288

Correction, for 24" bundle, it would be 3 X 8 for a total of 24. I'll still take a quote for 32. (super mongo)
>
> Hi John.
> I could go for 20=25% if you decide to proceed with the purchase.
> As far as useful diameters, I would be be bundling them anyway, so I'd use whatever number it required to make a 1" or so diameter rod.
> I just did that with a bunch of beads to make one about 1-1/4" by - only 10". Do you think adding girth while sacrificing length would make sense? We're talking work in low VLF/ELF region. I'm figuring go big both ways! (hence my interest in bushel (or maybe a peck).
> So, 4 X 8" = 24" rod length, then times # needed in the bundle. I'm thinking 8. 1 central rod surrounded by 7. I've bundled 5/16" carbon rods to fit in 1" thin wall PVC, (Chemalloy battery) so if the rod diameters are similar, we should good going with a total of 32.
> We're looking for a real Mongo here...
> So, if it is a go, hopefully they'd be closer to the 2 dollar range ;>)
>
> Thanks,
>
> John
>
> >
> > There are a bunch od cases of different sizes of ferrite rods on eBay, right now, that were made to be used in the manufacture of welded steel pipe. So they are high flux, medium frequency material (permeability falling off in the hundreds of kilohertz. power ferrite. So they wouldn't work very well for the broadcast band and above, but should work well below that band, including WWVB 60 kHz stuff.
> >
> > All sizes are 200mm (about 8 inches) long, in a range of diameters from 10mm to 18mm. The cases contain different number of rods for different diameter, but most cost about $150 to $200 per case for 48 to 150 rods.
> >
> > I am thinking of buying a case of one size (yet to be selected) and can't justify the cost or ever use a full case. So I am asking if anyone might be interested in buying some from me, at my cost. I estimate a per rod delivered cost in the $2 to $4 range (depending on size) by US mail.
> >
> > I am also open to suggestions as to the best diameter for or uses. If you want to keep your interest or contact info confidential, you may email me at jpopelish@ or through the email function on the group web page. But a little public discussion might be useful, first. Anybody interested? I live in the U.S., so shipping will be most reasonable to people in the U.S.
> >
> > --
> > Regards,

> >
> > John Popelish
> >
>

289. Re: Ferrite impeder rods made fro pipe welding

Yahoo group: ferriterodantennaexperimenters
Date: 2009-08-10 05:02:16 UTC
From: John Popelish
Topic: 286 Message: 289

--- In ferriterodantennaexperimenters@yahoogroups.com, "John Stumm" <jcstumm@...> wrote:
>
> Hi John.
> I could go for 20=25% if you decide to proceed with the purchase.
> As far as useful diameters, I would be be bundling them anyway, so I'd use whatever number it required to make a 1" or so diameter rod.
> I just did that with a bunch of beads to make one about 1-1/4" by - only 10". Do you think adding girth while sacrificing length would make sense? We're talking work in low VLF/ELF region. I'm figuring go big both ways! (hence my interest in bushel (or maybe a peck).
> So, 4 X 8" = 24" rod length, then times # needed in the bundle. I'm thinking 8. 1 central rod surrounded by 7. I've bundled 5/16" carbon rods to fit in 1" thin wall PVC, (Chemalloy battery) so if the rod diameters are similar, we should good going with a total of 32.
> We're looking for a real Mongo here...
> So, if it is a go, hopefully they'd be closer to the 2 dollar range

The smallest size available is just over 3/8" diameter (10mm). The largest size is just under 3/4 inch diameter (18mm). I am going to check on what fits inside various diameters of thin walled PVC before I decide what to buy.

As to bunching them up, since this material probably has a higher permeability than the normal RF antenna stuff, bundles are probably a waste of material, unless you are making rods longer than several yards. So, maybe just a stack, end to end of the larger diameter would be best for what you are trying.

When I get a little closer to ordering, I'll let you know what my top two or three choices are and we'll try to arrive at a consensus for the purchase.

I'll be in touch.

--
Regards,

John Popelish

290. Re: [ferriterodantennaexperimenters] Re: Ferrite impeder rods made fro pipe welding

Yahoo group: ferriterodantennaexperimenters
Date: 2009-08-10 13:35:56 UTC
From: ehydra
Topic: 286 Message: 290

Hi John -

The rods in the middle of the pack will receive much lower signal than the outer ones. You can try that with FEMM. I think it is useless to have any in the inner hole.
There is maybe a mechanical requirement. Sheer force.

And beware of ferrite resonance. The wave propagation in the rod is shorten by:
sqrt(er*ur)

er is approx. 1
ur is the effective value. Something like 80*uo*(ur of the material).
The 80 represents the form factor optimized. Equivalent to 10:1 for the length:width of the rod.

You should not go in the region of ferrite resonance. That will change the antenna to a transmission line.
Function in transmission line mode may work if you know how to fix it. I don't know how :-)

- Henry

--
ehydra.dyndns.info

John Stumm schrieb:
> Correction, for 24" bundle, it would be 3 X 8 for a total of 24. I'll still take a quote for 32. (super mongo)
>> Hi John.
>> I could go for 20=25% if you decide to proceed with the purchase.
>> As far as useful diameters, I would be be bundling them anyway, so I'd use whatever number it required to make a 1" or so diameter rod.
>> I just did that with a bunch of beads to make one about 1-1/4" by - only 10". Do you think adding girth while sacrificing length would make sense? We're talking work in low VLF/ELF region. I'm figuring go big both ways! (hence my interest in bushel (or maybe a peck).
>> So, 4 X 8" = 24" rod length, then times # needed in the bundle. I'm thinking 8. 1 central rod surrounded by 7. I've bundled 5/16" carbon rods to fit in 1" thin wall PVC, (Chemalloy battery) so if the rod diameters are similar, we should good going with a total of 32.
>> We're looking for a real Mongo here...
>> So, if it is a go, hopefully they'd be closer to the 2 dollar range ;>)
>>

291. Re: [ferriterodantennaexperimenters] Re: Ferrite impeder rods made fro pipe welding

Yahoo group: ferriterodantennaexperimenters
Date: 2009-08-10 13:37:24 UTC
From: ehydra
Topic: 286 Message: 291

Hi John -

What will be the effective cost of the rod including shipment to Germany?
I like to use one for a 77,5kHz receiver. Just to test it.

regards -
Henry

--
ehydra.dyndns.info

John Popelish schrieb:
> --- In ferriterodantennaexperimenters@yahoogroups.com, "John Stumm" <jcstumm@...> wrote:
>> Hi John.
>> I could go for 20=25% if you decide to proceed with the purchase.
>> As far as useful diameters, I would be be bundling them anyway, so I'd use whatever number it required to make a 1" or so diameter rod.
>> I just did that with a bunch of beads to make one about 1-1/4" by - only 10". Do you think adding girth while sacrificing length would make sense? We're talking work in low VLF/ELF region. I'm figuring go big both ways! (hence my interest in bushel (or maybe a peck).
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>> We're looking for a real Mongo here...
>> So, if it is a go, hopefully they'd be closer to the 2 dollar range
>
> The smallest size available is just over 3/8" diameter (10mm). The largest size is just under 3/4 inch diameter (18mm). I am going to check on what fits inside various diameters of thin walled PVC before I decide what to buy.
>
> As to bunching them up, since this material probably has a higher permeability than the normal RF antenna stuff, bundles are probably a waste of material, unless you are making rods longer than several yards. So, maybe just a stack, end to end of the larger diameter would be best for what you are trying.
>
> When I get a little closer to ordering, I'll let you know what my top two or three choices are and we'll try to arrive at a consensus for the purchase.
>
> I'll be in touch.
>

292. Re: [ferriterodantennaexperimenters] Re: Ferrite impeder rods made fro pipe welding

Yahoo group: ferriterodantennaexperimenters
Date: 2009-08-10 14:56:02 UTC
From: John Popelish
Topic: 286 Message: 292

ehydra wrote:
> Hi John -
>
> The rods in the middle of the pack will receive much lower signal than
> the outer ones. You can try that with FEMM. I think it is useless to
> have any in the inner hole.
> There is maybe a mechanical requirement. Sheer force.
>
>
> And beware of ferrite resonance. The wave propagation in the rod is
> shorten by:
> sqrt(er*ur)
>
> er is approx. 1
> ur is the effective value. Something like 80*uo*(ur of the material).
> The 80 represents the form factor optimized. Equivalent to 10:1 for the
> length:width of the rod.
>
> You should not go in the region of ferrite resonance. That will change
> the antenna to a transmission line.
> Function in transmission line mode may work if you know how to fix it. I
> don't know how :-)

I have done some experiments with breaking up the rod length
into several segments with air gaps in between to raise the
resonant frequency of the rod while lowering the effective
permeability. I think quite a bit of flexibility (trade
off) is possible. For low frequency uses, it is not so much
a problem, but when pushing the frequency range up, it is
always out there setting an effective (though somewhat
elastic) limit.

--
Regards,

John Popelish

293. Re: [ferriterodantennaexperimenters] Re: Ferrite impeder rods made fro pipe welding

Yahoo group: ferriterodantennaexperimenters
Date: 2009-08-10 15:00:29 UTC
From: John Popelish
Topic: 286 Message: 293

ehydra wrote:
> Hi John -
>
> What will be the effective cost of the rod including shipment to Germany?
> I like to use one for a 77,5kHz receiver. Just to test it.

I have no idea at the moment, but I once mailed an oscilloscope to someone in Serbia without taking out a loan, so I suspect we can get a couple rods to you for $10 or so shipping.

Do you have a diameter preference? I am trying to pick a diameter between 10mm and 18mm among the 6 or so choices available. I am leaning toward the larger size, just because it is different than the usual antenna rods we usually see, and because it would be more rugged if several are glued end to end. But I don't know what anyone else wants.

--
Regards,

John Popelish

294. Re: [ferriterodantennaexperimenters] Re: Ferrite impeder rods made fro pipe welding

Yahoo group: ferriterodantennaexperimenters
Date: 2009-08-11 00:40:06 UTC
From: ehydra
Topic: 286 Message: 294

Hi John -

I don't have any glue and will follow you. Is your offer in the states?
Maybe the other way around would be me more effective.

Drop me an email when you know the details with your money transfer
details. PayPal?

regards -
Henry

--
ehydra.dyndns.info

John Popelish schrieb:
> ehydra wrote:
>> Hi John -
>>
>> What will be the effective cost of the rod including shipment to Germany?
>> I like to use one for a 77,5kHz receiver. Just to test it.
>
> I have no idea at the moment, but I once mailed an
> oscilloscope to someone in Serbia without taking out a loan,
> so I suspect we can get a couple rods to you for $10 or so
> shipping.
>
> Do you have a diameter preference? I am trying to pick a
> diameter between 10mm and 18mm among the 6 or so choices
> available. I am leaning toward the larger size, just
> because it is different than the usual antenna rods we
> usually see, and because it would be more rugged if several
> are glued end to end. But I don't know what anyone else wants.
>

295. Re: Ferrite impeder rods made for pipe welding

Yahoo group: ferriterodantennaexperimenters
Date: 2009-08-11 02:34:19 UTC
From: John Popelish
Topic: 286 Message: 295

I have purchased a case of 60 each of the 18mm by 200mm power ferrite impeder rods for just about $2.50 each, delivered to me. At least 5 will fit in a small flat rate priority mail box that ships anywhere in the U.S for $4.95. So that makes a distributed shipment of 5 run $3.50 each, delivered ($17.50 total). I may be able to fit several more in that box. To ship only 1 or two, I think I can knock a couple dollars off by using first class mail. I'll have to look into shipping costs for international deliveries. I look forward to getting them in a week or so. I'll write back to everyone who expressed and interest, then, to determine who gets what count.

--
Regards,

John Popelish

296. Resonance of long ferrite rod antennas.

Yahoo group: ferriterodantennaexperimenters
Date: 2009-08-15 19:05:10 UTC
From: John Popelish
Topic: 296 Message: 296

Now that I have a supply of long ferrite rods yo play with, I have been thinking about the limitation of the length of a ferrite rod for receiving or transmitting. As I understand it, the rod becomes very lossy and inefficient if the propagation delay the length of the rod equals the half period of the wave, because the rod acts like a transmission line (well, a wave guide, actually) instead of a permeable path for external flux.

But folded dipoles are also resonant transmission lines and they make fine antennas. As I see it, surrounding the middle of a resonant rod with a coil is just not a good means to couple into the wave energy bouncing back and forth along the rod. If a better means of coupling into that energy could be constructed, it seems that a resonant rod would be good, self selective antenna, just like a resonant folded dipole is.

I have some ideas about alternate means (than a central coil) to couple to the standing wave in the rod, but will save them for another post.

Any comments on these thoughts? What am I missing?

--
Regards,

John Popelish

297. Re: Ferrite impeder rods made fro pipe welding

Yahoo group: ferriterodantennaexperimenters
Date: 2009-08-16 19:54:37 UTC
From: John Popelish
Topic: 286 Message: 297

--- In ferriterodantennaexperimenters@yahoogroups.com, ehydra <ehydra@...> wrote:
(snip)
> And beware of ferrite resonance. The wave propagation in the rod is
> shorten by:
> sqrt(er*ur)
>
> er is approx. 1
> ur is the effective value. Something like 80*uo*(ur of the material).
> The 80 represents the form factor optimized. Equivalent to 10:1 for the
> length:width of the rod.
>
> You should not go in the region of ferrite resonance. That will change
> the antenna to a transmission line.
> Function in transmission line mode may work if you know how to fix it. I
> don't know how :-)

Now that I have a supply of 8 inch long pieces (200mm) this post has got me thinking. A folded dipole is a resonant transmission line structure, yet makes a fine tuned antenna structure. I think the problem with a self resonant ferrite antenna is that an over-wound coil is not the best way to extract energy from the wave energy bouncing back and forth inside the rod, like it is for a the flux that is nearly all at the same phase throughout a short (below resonance) rod.

Do you know of any technical reference that describes the wave mode inside a long rod when it is at resonance (acting like a transmission line or wave guide)? If we can get our minds wrapped around the wave mode, we might be able to come up with an efficient way to extract energy from that mode and make a tuned rod antenna where the length and properties of the rod set the resonance, instead of a tuned LC wrapped around it.

Any help you can lead me to is much appreciated. I haven't had much luck Googling this subject.

--
Regards,

John Popelish

298. Re: Ferrite impeder rods made for pipe welding

Yahoo group: ferriterodantennaexperimenters
Date: 2009-08-17 14:42:13 UTC
From: John Popelish
Topic: 286 Message: 298

--- In ferriterodantennaexperimenters@yahoogroups.com, "John Popelish" <jpopelish@...> wrote:
>
> I have purchased a case of 60 each of the 18mm by 200mm power ferrite impeder rods for just about $2.50 each, delivered to me.
(snip)

The rods have arrived, and I have figured out how to pack up to 9 of them in a $5 small flat rate priority mail box for delivery to the U.S. for a total of $27.50. I want to keep a dozen, so I have 4 dozen to distribute.

If you want some, please send me your mailing address. Dibs to those who contacted me earlier. In case Yahoo tries to hide my address, I will add spaces to it. my email is

jpopelish @ rica . net

I'll include an addressed envelope that you can use to pay me with cash, check or money order.

--
Regards,

John Popelish

299. Re: [ferriterodantennaexperimenters] Re: Ferrite impeder rods made fro pipe welding

Yahoo group: ferriterodantennaexperimenters
Date: 2009-08-19 01:07:13 UTC
From: John Popelish
Topic: 286 Message: 299

ehydra wrote:
> Hi John -
>
> What will be the effective cost of the rod including shipment to Germany?
> I like to use one for a 77,5kHz receiver. Just to test it.

If i understand the online postage calculator, 1 to 8 or 9
rods would cost about $13 to Germany (4 pound limit and 9
rods make a 3.7 pound parcel).

If this is not too much, please provide a mailing address.
I'll include an addressed envelope for you to use to return
payment.

My email (remove spaces) is
jpopelish @ rica . net

--
Regards,

John Popelish

300. Re: [ferriterodantennaexperimenters] Re: Ferrite impeder rods made fro pipe welding

Yahoo group: ferriterodantennaexperimenters
Date: 2009-08-19 14:54:08 UTC
From: ehydra
Topic: 286 Message: 300

Hi John -

As it was my post:
1. All after the sentence about 'effective ur' must be corrected. I don't have the formulas in the head but Snelling Soft Ferrite etc. will show that.
2. I don't have any glue with ferrite transmission line. If I find any reference I will drop a note. As a german native speaker I always have problems with correct english google words... (but can read older german literature :-)

Yes, the folded dipole works as written. If I recall it correctly, one of the BBC older tech notes outlines more specifics.

Maybe such a system is more effective than the older L-coupling trafo??

regards -
Henry

--
ehydra.dyndns.info

John Popelish schrieb:
> --- In ferriterodantennaexperimenters@yahoogroups.com, ehydra <ehydra@...> wrote:
> (snip)
>> And beware of ferrite resonance. The wave propagation in the rod is
>> shorten by:
>> sqrt(er*ur)
>>
>> er is approx. 1
>> ur is the effective value. Something like 80*uo*(ur of the material).
>> The 80 represents the form factor optimized. Equivalent to 10:1 for the
>> length:width of the rod.
>>
>> You should not go in the region of ferrite resonance. That will change
>> the antenna to a transmission line.
>> Function in transmission line mode may work if you know how to fix it. I
>> don't know how :-)
>
> Now that I have a supply of 8 inch long pieces (200mm) this post has got me thinking. A folded dipole is a resonant transmission line structure, yet makes a fine tuned antenna structure. I think the problem with a self resonant ferrite antenna is that an over-wound coil is not the best way to extract energy from the wave energy bouncing back and forth inside the rod, like it is for a the flux that is nearly all at the same phase throughout a short (below resonance) rod.

>
> Do you know of any technical reference that describes the wave mode inside a long rod when it is at resonance (acting like a transmission line or wave guide)? If we can get our minds wrapped around the wave mode, we might be able to come up with an efficient way to extract energy from that mode and make a tuned rod antenna where the length and properties of the rod set the resonance, instead of a tuned LC wrapped around it.
>
> Any help you can lead me to is much appreciated. I haven't had much luck Googling this subject.
>

301. Re: [ferriterodantennaexperimenters] Re: Ferrite impeder rods made fro pipe welding

Yahoo group: ferriterodantennaexperimenters
Date: 2009-08-19 15:23:06 UTC
From: John Popelish
Topic: 286 Message: 301

ehydra wrote:
> Hi John -
>
> As it was my post: 1. All after the sentence about
> 'effective ur' must be corrected. I don't have the
> formulas in the head but Snelling Soft Ferrite etc. will
> show that.

Snelling seems to have thought about almost every aspect of ferrite use. But have you seen the price of a copy? Yikes!

> 2. I don't have any glue with ferrite
> transmission line. If I find any reference I will drop a
> note. As a german native speaker I always have problems
> with correct english google words... (but can read older
> german literature :-)
>
> Yes, the folded dipole works as written. If I recall it
> correctly, one of the BBC older tech notes outlines more
> specifics.
>
> Maybe such a system is more effective than the older
> L-coupling trafo??

I am just tying to wrap my brain around how a ferrite rod contains a traveling wave as a solid state waveguide and what mode of EM wave can get contained in such an object (never minding, for now, how to extract a signal from that wave). From the assumption of nonconducting surface boundary condition, it would seem that the wave would have to have the E field parallel to the surface of the rod. Maybe it is the TE01 mode for cylindrical waveguide, the so called low loss mode, with the e field around the circumference, magnetic field radial, toward or away from the center. Sort of like how waves pass through a coaxial cable, only with the roles of e and M fields interchanged.

But I am having trouble visualizing how an external plane wave interacts with this and causes this. However, just as with a coaxial cable, this mode would certainly be almost all internal and couple poorly to an external coaxial coil.

I just have a suspicion that if the rod resonance wave mode were firmly understood, the best coupling mechanism to an outside circuit would jump right out at us and give us a

possibly new resonant antenna structure.

--
Regards,

John Popelish

302. Re: [ferriterodantennaexperimenters] Re: Ferrite impeder rods made fro pipe welding

Yahoo group: ferriterodantennaexperimenters
Date: 2009-08-19 21:44:05 UTC
From: ehydra
Topic: 286 Message: 302

John Popelish schrieb:
> ehydra wrote:
>> Hi John -
>>
>> As it was my post: 1. All after the sentence about
>> 'effective ur' must be corrected. I don't have the
>> formulas in the head but Snelling Soft Ferrite etc. will
>> show that.
>
> Snelling seems to have thought about almost every aspect of
> ferrite use. But have you seen the price of a copy? Yikes!
>

Yes. Very expensive. I have the luck that my home is within reach of the
local university and *bingo* they have such exotic books. Unfortunately
not all I want to read.
Even after allmost 2 years there is no request by others to borrow that
specific book. So I extend the lend every time, month for month :-)

>> 2. I don't have any glue with ferrite
>> transmission line. If I find any reference I will drop a

> I just have a suspicion that if the rod resonance wave mode
> were firmly understood, the best coupling mechanism to an
> outside circuit would jump right out at us and give us a
> possibly new resonant antenna structure.
>

new ??
I thought almost all was already in a paper somewhere. I would look with
Google first before becoming a headache. Hey, it's summertime...

- Henry

--
ehydra.dyndns.info

303. Impeder rod loop test results

Yahoo group: ferriterodantennaexperimenters
Date: 2009-09-23 01:53:42 UTC
From: lowalacrity
Topic: 303 Message: 303

Hello All,
I have preliminary results for 3 - 32" loop antennas inputting a small telephone pick-up amp coupled together via a matching transformer. I determined the maximum output by varying the # of seriesed turns of the 140 turn comm cable wound loops. 140X4 worked better than 140X8. Also in my shop, determined the best imp match transformer and mini amp. Found that the impeder rods performed much better than 32" of ferrite beads and that direct winding on 1/2" pvc worked best.
Field testing in daylight involved judging how well they picked up spherics as well as how far away they would pick up my Casio watch! (incidentally) I already knew which impeder loop worked best so I compared it against my e-field receiver and 3 ft air core. The e-field had always been hard to beat but it came close. The fold-up air core was also somewhat better when nulled and produced a little less hum. The impeder rods are hum magnets! The impeder loops also proved best at picking up the ticking of my quartz watch, audible at 2 ft even through the hum! I plan on incrementing longer lengths, both rod segments and windings to see where returns start to deminish. Stay tuned!

73
John

304. Re: Impeder rod loop test results

Yahoo group: ferriterodantennaexperimenters
Date: 2009-09-23 02:03:47 UTC
From: lowalacrity
Topic: 303 Message: 304

I forgot to say I have posted pics of the field tests.

--- In ferriterodantennaexperimenters@yahoogroups.com, "lowalacrity" <jcstumm@...> wrote:
>
> Hello All,
> I have preliminary results for 3 - 32" loop antennas inputting a small telephone pick-up amp coupled together via a matching transformer. I determined the maximum output by varying the # of seriesed turns of the 140 turn comm cable wound loops. 140X4 worked better than 140X8. Also in my shop, determined the best imp match transformer and mini amp. Found that the impeder rods performed much better than 32" of ferrite beads and that direct winding on 1/2" pvc worked best.
> Field testing in daylight involved judging how well they picked up spherics as well as how far away they would pick up my Casio watch! (incidentally) I already knew which impeder loop worked best so I compared it against my e-field receiver and 3 ft air core. The e-field had always been hard to beat but it came close. The fold-up air core was also somewhat better when nulled and produced a little less hum. The impeder rods are hum magnets! The impeder loops also proved best at picking up the ticking of my quartz watch, audible at 2 ft even through the hum! I plan on incrementing longer lengths, both rod segments and windings to see where returns start to deminish. Stay tuned!
>
> 73
> John
>

305. Ferrite rod transmitting antenna?

Yahoo group: ferriterodantennaexperimenters
Date: 2009-10-13 21:15:10 UTC
From: G3XBM
Topic: 305 Message: 305

Has anyone here tried to use a ferrite rod as a transmitter antenna?

I appreciate the limitations due to core saturation would limit power to very low levels (hundreds of milliwatts?) but I have never seen a design for a ferrite rod based magnetic loop TX antenna or an E-field antenna in which a ferrite rod makes up most, if not all, of the antenna.

73s
Roger G3XBM
http://g3xbm-qrp.blogspot.com/

306. Re: Ferrite rod transmitting antenna?

Yahoo group: ferriterodantennaexperimenters
Date: 2009-10-14 00:14:47 UTC
From: Steven C
Topic: 305 Message: 306

Roger,

You can avoid saturation by designing for the rod to radiate all its field energy every cycle. It's a problem I can't completely solve. Flyback power supply transformers do it by dumping the field energy into the secondary each cycle. At 500 kHz some forward converters can pass 80 watts through a thumb-sized ferrite transformer. To do so without a secondary requires very complete energy transfer to the expanding wavefront.

Let's say you drive the rod with a power MOSFET. Use a rectangular pulse train. (We sometimes describe the wave shape as an inverted boxcar train.) A current transformer in the MOSFET's source sees the current jump upward. After the initial jump, the current will rise linearly. If the current starts to curve upward above a straight line, the rod is saturating and the MOSFET's gate must be slammed off. All the needed circuitry resides in switching power supply ICs containing the 'primary current monitoring' feature. In the late 1990s a few such chips could operate up to the top of the North American 160-meter band (2000 kHz). By now they should be available to beyond 4 MHz. See some switch-mode power converter application notes for he details. Also, check resonant converter application notes for possible ideas.

Ferrite rods can be glued end-to-end. By doing so and distributing the turns along the rod, you should have antenna overcoming the issues from inter-turn capacitance. That would reduce problems in the BJT, FET, or vacuum tube driving the rod. It should also increase energy transfer to the wavefront.

I'd love to hear about any experiments you perform.

73,

Steven, KD7YTE

--- In ferriterodantennaexperimenters@yahoogroups.com, "G3XBM" <rogerlapthorn@...> wrote:
>
> Has anyone here tried to use a ferrite rod as a transmitter antenna?
>
> I appreciate the limitations due to core saturation would limit power to very low levels (hundreds of milliwatts?) but I have never seen a design for a ferrite rod based magnetic loop TX antenna or an E-field antenna in which a ferrite rod makes up most, if not all, of the antenna.
>
> 73s
> Roger G3XBM
> http://g3xbm-qrp.blogspot.com/
>

307. Re: [ferriterodantennaexperimenters] Ferrite rod transmitting antenna?

Yahoo group: ferriterodantennaexperimenters
Date: 2009-10-14 02:14:52 UTC
From: Russell Shaw
Topic: 305 Message: 307

G3XBM wrote:
> Has anyone here tried to use a ferrite rod as a transmitter antenna?
>
> I appreciate the limitations due to core saturation would limit power to very low levels (hundreds of milliwatts?) but I have never seen a design for a ferrite rod based magnetic loop TX antenna or an E-field antenna in which a ferrite rod makes up most, if not all, of the antenna.

A rod about 1" by 1/4" was very commonly used in the key-fob 27MHz transmitter control for garage door openers. It had around 5 turns of 1mm wire on it with wide spacing between turns.

308. Twin Coil AM Ferrite Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2010-03-06 01:27:18 UTC
From: Adam E
Topic: 308 Message: 308

I just bought a HD-100 Radiosophy table top receiver, the AM reception is good, but it is not locking in on most distant HD AM stations. Will the Twin Coil AM Ferrite Antenna work better for HD-AM DX reception?

Adam E.

309. New ferrite bar antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2010-06-15 16:51:23 UTC
From: salmonguyrep
Topic: 309 Message: 309

I completed work on a new ferrite bar antenna this past weekend. A 19" Stormwise 125 mu ferrite bar with a 40 turn primary center positioned winding made of 630/46 Litz wire--a 365 pfd variable cap for tuning--all placed inside a 2" diameter 2' long PVC pipe. The nulls are very sharp and the gain is also remarkable. I will compare it to my 27" ferrite bar antenna and my Select-a-tenna using high, middle, and low band frequencies at noon in an RF modest environment using a SONY 2010 and an Eton 1. I have a broadband BAX-1 RF preamp which can be interposed between the 27"er or the Select-a-tenna and either radio, and also an inductive coil (homebrew)that works well as a poor man's impedance matching device. I will make a chart showing the relative gains at the different frequencies once I have completed the work, using all the possible permutations of direct and indirect coupling, with and without amplification. My initial impressions are that the 19"er and 27"er hear just about identically well, and that both blow the socks off the Select-a-tenna. If direct passive coupling works well with the 19"er this will become my accessory of choice in that it is more transportable than the 27"er.

The most difficult part in building one of these is finding a way to mechanically stabilize the variable capacitor with in the PVC pipe--onjce that task in accomplished the rest is very straight forward. i will also try to download some photographs of the completed 19"er...

310. (no subject)

Yahoo group: ferriterodantennaexperimenters
Date: 2010-06-21 19:20:18 UTC
From: salmonguyrep
Topic: 310 Message: 310

Here is the promised test data using the new 19" antenna:

SONY 2010

Antenna 550 kHz 1030 kHz 1540 kHz
Internal ferrite 2/10 0/10 1/10
19"/secondary coil 0/10 0/10 0/10
27"/secondary coil 0/10 0/10 0/10
SAT/induct. 6/10 5/10 4/10
19"/induct. 9/10 10/10 8/10
27"/ induct. 8/10 8/10 8/10
SAT/secondary coil 6/10 1/10 2/10
19"/secondary coil 0/10 0/10 0/10

Note: Test stations were KTSA 550 kHz, San Antonio, TX (183 miles distance), KCTA 1030 kHz, Corpus Christi, TX (170 miles distance), and KGBC, Galveston, TX (47 miles distance). All tests conducted at 12:00 p.m. from an indoors location in Houston, TX; moderate RFI. SAT = Select-a-tenna (unamplified model). Loc/Dx switch set to "Loc" position. Secondary pick-up coil is 38 turns of 20 AWG pick-up wire on 7.5" ferrite bar salvaged from an old RCA portable radio. RF gain switch set to 1/10 LED lights activated when listening to 1540 kHz. Tuning each station was accomplished by peaking via tuning the 365 pfd capacitor, then rotating both radio and external antenna or secondary pick up coil (placed parallel to the internal ferrite bar antenna) for maximum LED display.

Eton E1
Antenna 550 kHz 1030 kHz 1540 kHz
Whip S1 S3 S1
SAT/secondary coil S1 S1 S1
19"/secondary coil S8 S7 S6
27"/secondary coil S8 S6 S6
SAT/Direct coupled S7 S7 S6
27"/Direct coupled S6 S7 S6
SAT/Direct/BAX-1 S0 S0 S0
27"/Direct/BAX-1 S+25 S+25 S+25
Note: The 19" antenna does not have a jack for direct coupling purposes. Direct + BAX-1: the sequence of components is external antenna connected to BAX-1 connected to Eton E1.

Conclusion: The nulls were all consistently sharpest with the 19" antenna. Except for extremely weak stations in which the BAX-1 may be useful it appears that the 19" antenna will "hear" almost everything that the 27" antenna will, with sharper nulls as well. I will next focus on the SONY 2010 with the inductively coupled 19" antenna versus the 27" wit/without BAX-1 amplification to test weak signal "dx-ability". Will keep you posted!

Salmonguy

311. ferrite bar antenna experiments with the Satellit 750

Yahoo group: ferriterodantennaexperimenters
Date: 2010-10-12 14:02:50 UTC
From: salmonguyrep
Topic: 311 Message: 311

An interesting experiment last night using my Satellit 750 and two different home brew ferrite bar antennas; one made from a 19" 125 mu and one made from a 27" 125 mu ferrite bar□both purchased from Stormwise and both with a primary coil made from 38 turns of 630/46 Litz wire, where the 27" antenna also has a secondary pick up coil of 4 turns placed over the center of the primary coil. It was a perfect fall evening in Houston weather-wise, and so I moved my equipment to a small roof deck about 50' above street level, at a location that is RF quiet compared to my usual indoor location.

The 19" antenna inductively couples to the ferrite bar antenna of the Satellit 750. Previous tests demonstrated essentially no difference in the magnitude of RF gain when comparing the 19" and 27" antennas using inductive coupling, as confirmed in the more RF quiet roof deck location. The Satellit 750 is a fun radio to use because you can manipulate both the RF gain and the volume for optimal reception. The 19" antenna, inductively coupled, overloaded the radio when the RF gain pot was set at 3 o'clock or more. The 27" antenna when direct coupled to the female jack on the ferrite bar antenna of the Satellit 750 (another really nice feature for antenna experimenters) was much quieter than the 19" inductively coupled antenna, so much so that I had to run the RF gain control at maximum level to be able to hear much of anything. When I interposed an old BAX-1 RF broadband preamplifier between the 27"er and the Satellit 750 ferrite bar antenna the radio overloaded even with the RF gain control set at the most minimal level.

The nulls were sharpest with the 19" antenna, although the 27"er is mounted on a tripod so I could get some additional nulling with it by using the altazimuth adjustments possible with the tripod and not possible with the 19"er inductively coupled to the radio.
All in all, the 19" antenna provides the best combination of RF gain, nullability, and portability. Tonight I will test this set up versus the 27"er direct coupled to an E1.

73s;

Salmonguy

312. Additional comparisons: E1 vs Satellit 750

Yahoo group: ferriterodantennaexperimenters
Date: 2010-10-21 14:40:14 UTC
From: salmonguyrep
Topic: 312 Message: 312

I had the opportunity to compare the Eton E1 direct coupled to my 27" ferrite bar antenna with and without the BAX-1 RF preamplifier versus the Grundig Satellit 750 inductively coupled to my 19" ferrite bar antenna. the antenna construction details are fully described in previous postings.

Interestingly, in spite of the E1 pass band tuning and synchronous detection capacities as well as altazimuth capacities of the ferrite bar antenna which is mounted on a camera tripod, the processor noise floor of the E1 (including when direct coupling without the BAX-1) was sufficiently high enough to both muffle the sound being heard (very good earphones) as well as making it impossible to hear several weak stations throughout the MW band as compared to the Satellit 750 with the 19" antenna. This latter set up resulted in much sharper nulls, remarkably more gain, and a comparatively superior ability to detect weak signals throughout the MW band.

Next comparison will be the Satellit 750/19" antenna versus the Sony 2010/19" antenna, both inductively coupled. I would love to be able to do a comparison of the Satellit 750/19" ferrite bar antenna versus a more capable table top receiver or a computer-based radio, if only to see what I am missing with the Satellit 750/19" combination...

73s

Salmonguy in Houston

313. New ferrite loop configuration

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-21 03:52:53 UTC
From: Tom McKee
Topic: 313 Message: 313

I'm new to the group, but thought that this link which appeared in a message on the ultralightdx group might be of interest.

It describes a new ferrite loop configuration that is reported to be vastly superior to anything known in the past.

The loop description starts about 2/3 down the page after the technical discussion.

http://www.gmweb2.net/The%20FS%20Loop.htm

Tom McKee

==========
We Skype -- Visit our web sites:
Inland Marine Radio History Archive
GE Mobile Radio History
Swing Music Broadcasts
Joyce McKee's Art Gallery Page

314. Re: [ferriterodantennaexperimenters] New ferrite loop configuration

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-21 05:34:36 UTC
From: John Popelish
Topic: 313 Message: 314

On 02/20/2011 10:52 PM, Tom McKee wrote:
> I'm new to the group, but thought that this link which
> appeared in a message on the ultralightdx group might be
> of interest.
>
> It describes a new ferrite loop configuration that is
> reported to be vastly superior to anything known in the
> past.
>
> The loop description starts about 2/3 down the page
> after the technical discussion.
>
> http://www.gmweb2.net/The%20FS%20Loop.htm

I haven't read this in all its detail, but scanned through it. I think it is a good example of a person not being very well versed in the actual mathematics of electro-magnetic theory, but trying to use a conversational approximation of that theory to explain what they are seeing (especially in the discussion of permanent magnets). It is not surprising that they he has found such an approximate version of the theory to be lacking in predictive power.

This fellow also demonstrates that many different hypotheses can fit the data, especially if you are not looking very closely (quantitatively) and not working to specifically disprove his own pet hypothesis as
the scientific method requires. I, see no where in this article, where he ever considers what experimental result would most clearly falsify his own hypotheses, so that those results could be searched for.

I also wonder if he has ever considered the speed of light, at the frequencies involved in his experiments, inside highly (and variably with frequency) permeable and pretty high permitivity (and variable with frequency) ferrite material. The speed of light is a constant only in a vacuum.

I like his experimental enthusiasm, though.

--
Regards,

John Popelish

315. Re: [ferriterodantennaexperimenters] New ferrite loop configuration

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-21 14:55:17 UTC
From: ehydra
Topic: 313 Message: 315

I always prefer pictures. So just jumped to the end.

A ring of ferrite rod is a very old idea. I first saw it on a russian website.
A paper desribes that the optimum is to have the ferrites more distant in the ring. A sinfle rod shapes the lines around it to a little extend of its own structure!

If rods are lengthen by adding them serial, the hole must be minimized.

Badly, so much effort for such less efficiency.

- Henry

--
ehydra.dyndns.info

John Popelish schrieb:
> On 02/20/2011 10:52 PM, Tom McKee wrote:
>> I'm new to the group, but thought that this link which
>> appeared in a message on the ultralightdx group might be
>> of interest.
>>
>> It describes a new ferrite loop configuration that is
>> reported to be vastly superior to anything known in the
>> past.
>>
>> The loop description starts about 2/3 down the page
>> after the technical discussion.
>>
>> http://www.gmweb2.net/The%20FS%20Loop.htm
>
> I haven't read this in all its detail, but scanned through
> it. I think it is a good example of a person not being very
> well versed in the actual mathematics of electro-magnetic
> theory, but trying to use a conversational approximation of
> that theory to explain what they are seeing (especially in
> the discussion of permanent magnets). It is not
> surprising that they he has found such an approximate
> version of the theory to be lacking in predictive power.
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> This fellow also demonstrates that many different hypotheses
> can fit the data, especially if you are not looking very
> closely (quantitatively) and not working to specifically
> disprove his own pet hypothesis as
> the scientific method requires. I, see no where in this

> article, where he ever considers what experimental result
> would most clearly falsify his own hypotheses, so that those
> results could be searched for.
>
> I also wonder if he has ever considered the speed of light,
> at the frequencies involved in his experiments, inside
> highly (and variably with frequency) permeable and pretty
> high permitivity (and variable with frequency) ferrite
> material. The speed of light is a constant only in a vacuum.
>
> I like his experimental enthusiasm, though.
>

316. Ferrite Sleeve Loop antenna comments

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-21 19:39:11 UTC
From: Steve Ratzlaff
Topic: 316 Message: 316

I'm sorry but I was unable to decipher the meaning in Henry's previous technical comments about the ferrite sleeve antenna article. If he has built one and has a way to improve it, I would be very interested in learning the details. And of learning the URL to the Russian webpage with a similar article. I'm not qualified to comment on Graham Maynard's ideas of how the antenna is supposed to work.

But I built a ferrite sleeve loop (FSL) antenna several days ago, using a 4.5" diameter styrene plumbing coupler form and forty 3/8" x 8" 400 mu ferrite rods obtained from an overseas eBay seller, arranged around the form. I wound an LF coil with 60 turns of spaced windings using 5/36 small Litz wire that had about 1500 microhenries inductance. I used a small polyvaricon tuning capacitor to tune the 200-530 kHz NDB range. This antenna works incredibly well for something only 8" long, and is far superior to the Stormwise 18" 800 mu ferrite rod with LF coil that I had been using. The FSL weighs 7.8 pounds--not something you'd carry around as a handheld portable antenna but when used with a turntable to rotate it, sitting on a table, it works great.

I hope others will try building one and report their results. Unfortunately ferrite isn't inexpensive, even from the various overseas eBay sellers--the postage alone to USA is considerable, due to the weight.
73,
Steve

317. Re: [ferriterodantennaexperimenters] Ferrite Sleeve Loop antenna comments

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-21 20:27:08 UTC
From: ehydra
Topic: 316 Message: 317

Sorry Steve, what was wrong? The one typo "sinfle" should read "single".

If you want it effective consider an E-field antenna. My personal experience is that at least to 1MHz it is way more effective than building with hard-to-find, expensive but easy to break ferrite rods! A problem is that it is intrinsic high-bandwidth so needs a very robust front-end amp.

I'm not sure if i find the russian page a second time.

Many scientific papers available!

- Henry

--
ehydra.dyndns.info

Steve Ratzlaff schrieb:
> I'm sorry but I was unable to decipher the meaning in Henry's previous
> technical comments about the ferrite sleeve antenna article. If he has built
> one and has a way to improve it, I would be very interested in learning the
> details. And of learning the URL to the Russian webpage with a similar
> article. I'm not qualified to comment on Graham Maynard's ideas of how the
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> ferrite rods obtained from an overseas eBay seller, arranged around the
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> Litz wire that had about 1500 microhenries inductance. I used a small
> polyvaricon tuning capacitor to tune the 200-530 kHz NDB range. This antenna
> works incredibly well for something only 8" long, and is far superior to the
> Stormwise 18" 800 mu ferrite rod with LF coil that I had been using. The
> FSL weighs 7.8 pounds--not something you'd carry around as a handheld
> portable antenna but when used with a turntable to rotate it, sitting on a
> table, it works great.
>
> I hope others will try building one and report their results. Unfortunately
> ferrite isn't inexpensive, even from the various overseas eBay sellers--the
> postage alone to USA is considerable, due to the weight.
> 73,
> Steve

318. Re: [ferriterodantennaexperimenters] Ferrite Sleeve Loop antenna comments

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-21 20:34:49 UTC
From: John Popelish
Topic: 316 Message: 318

On 02/21/2011 02:39 PM, Steve Ratzlaff wrote:
(snip)
> But I built a ferrite sleeve loop (FSL) antenna several
> days ago, using a 4.5" diameter styrene plumbing coupler
> form and forty 3/8" x 8" 400 mu ferrite rods obtained
> from an overseas eBay seller, arranged around the form.
> I wound an LF coil with 60 turns of spaced windings using
> 5/36 small Litz wire that had about 1500 microhenries
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> to tune the 200-530 kHz NDB range. This antenna works
> incredibly well for something only 8" long, and is far
> superior to the Stormwise 18" 800 mu ferrite rod with LF
> coil that I had been using. The FSL weighs 7.8
> pounds--not something you'd carry around as a handheld
> portable antenna but when used with a turntable to rotate
> it, sitting on a
(snip)

If your unit is not permanently assembled, and there is a
way for you to quantify its performance, in some way,
besides an inductance measurement, I would love to see the
effect of replacing every other rod with a wooden dowel or
similar spacer. I predict a slightly lower inductance
(maybe 70% of the 40 rod version), but a similar sensitivity.

--
Regards,

John Popelish

319. Re: [ferriterodantennaexperimenters] Ferrite Sleeve Loop antenna comments

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-21 20:47:16 UTC
From: Steve Ratzlaff
Topic: 316 Message: 319

Hi Henry,
Please, could you further comment on these things you wrote?

What does "have the ferrite more distant in the ring" mean? What does "A single rod shapes the lines around it to a little extend of its own structure!" mean? What does "If rods are lengthened by adding them serial, the hole must be minimized" mean?
I don't understand any of that.
73,
Steve

----- Original Message -----
From: "ehydra" <ehydra@...>
To: <ferriterodantennaexperimenters@yahoogroups.com>
Sent: Monday, February 21, 2011 12:27 PM
Subject: Re: [ferriterodantennaexperimenters] Ferrite Sleeve Loop antenna comments

> Sorry Steve, what was wrong? The one typo "sinfle" should read "single".
>
> If you want it effective consider an E-field antenna. My personal
> experience is that at least to 1MHz it is way more effective than
> building with hard-to-find, expensive but easy to break ferrite rods!
> A problem is that it is intrinsic high-bandwidth so needs a very robust
> front-end amp.
>
>
> I'm not sure if i find the russian page a second time.
>
> Many scientific papers available!
>
>
> - Henry
>
>
> --
> ehydra.dyndns.info
>
>
>
> Steve Ratzlaff schrieb:
>> I'm sorry but I was unable to decipher the meaning in Henry's previous
>> technical comments about the ferrite sleeve antenna article. If he has
>> built

>> one and has a way to improve it, I would be very interested in learning
>> the
>> details. And of learning the URL to the Russian webpage with a similar
>> article. I'm not qualified to comment on Graham Maynard's ideas of how
>> the
>> antenna is supposed to work.
>>
>> But I built a ferrite sleeve loop (FSL) antenna several days ago, using a
>> 4.5" diameter styrene plumbing coupler form and forty 3/8" x 8" 400 mu
>> ferrite rods obtained from an overseas eBay seller, arranged around the
>> form. I wound an LF coil with 60 turns of spaced windings using 5/36
>> small
>> Litz wire that had about 1500 microhenries inductance. I used a small
>> polyvaricon tuning capacitor to tune the 200-530 kHz NDB range. This
>> antenna
>> works incredibly well for something only 8" long, and is far superior to
>> the
>> Stormwise 18" 800 mu ferrite rod with LF coil that I had been using. The
>> FSL weighs 7.8 pounds--not something you'd carry around as a handheld
>> portable antenna but when used with a turntable to rotate it, sitting on
>> a
>> table, it works great.
>>
>> I hope others will try building one and report their results.
>> Unfortunately
>> ferrite isn't inexpensive, even from the various overseas eBay
>> sellers--the
>> postage alone to USA is considerable, due to the weight.
>> 73,
>> Steve
>
>
> ----------
>
> Yahoo! Groups Links
>
>
>

320. Re: Ferrite Sleeve Loop antenna comments

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-21 21:00:07 UTC
From: Steve Ratzlaff
Topic: 316 Message: 320

Hi John,
Perhaps your ambitious experiment idea can be implemented eventually. For now the antenna is being used to receive signals and I have no intention of modifying it!
On my HP4342A Q meter it measured relatively poor Q, around 200 at 200 kHz and 60 at 600 kHz. But my ongoing longterm experimental efforts show there is little to no relation to Q and actual receiving sensitivity for a ferrite antenna, and that is holding true with this new FSL too.
Should I eventually try your experiment, I will certainly report the results, though it will be hard to figure out how to compare the before and after sensitivity.
----- Original Message -----
From: "John Popelish" <jpopelish@...>
To: <ferriterodantennaexperimenters@yahoogroups.com>
Sent: Monday, February 21, 2011 12:34 PM
Subject: Re: [ferriterodantennaexperimenters] Ferrite Sleeve Loop antenna comments

>
> If your unit is not permanently assembled, and there is a
> way for you to quantify its performance, in some way,
> besides an inductance measurement, I would love to see the
> effect of replacing every other rod with a wooden dowel or
> similar spacer. I predict a slightly lower inductance
> (maybe 70% of the 40 rod version), but a similar sensitivity.
>
> --
> Regards,
>
> John Popelish

321. Re: [ferriterodantennaexperimenters] Re: Ferrite Sleeve Loop antenna comments

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-21 21:37:56 UTC
From: John Popelish
Topic: 316 Message: 321

On 02/21/2011 04:00 PM, Steve Ratzlaff wrote:
> Hi John,
> Perhaps your ambitious experiment idea can be implemented eventually. For
> now the antenna is being used to receive signals and I have no intention of
> modifying it!
> On my HP4342A Q meter it measured relatively poor Q, around 200 at 200 kHz
> and 60 at 600 kHz. But my ongoing longterm experimental efforts show there
> is little to no relation to Q and actual receiving sensitivity for a ferrite
> antenna, and that is holding true with this new FSL too.
> Should I eventually try your experiment, I will certainly report the
> results, though it will be hard to figure out how to compare the before and
> after sensitivity.

I have an AM tower, nearby. I use that as a standard signal source, wince I can read an antenna's output tuned to that frequency, directly with an AC RF millivoltmeter.

Perhaps you will build a second unit, eventually. But I understand that 20 ferrite rods are quite an investment.

Of course, if my predictions are correct, you could build a second unit with the rods you pull out of this one.

As to the Q, did you see the photos if my hour glass coil (actually a pair of coils in parallel, with the grounded ends at the outside of the hour glass)? That was one of my highest Q rod antennas. I wonder of you would see similar results on your rod array.

--
Regards,

John Popelish

322. Re: [ferriterodantennaexperimenters] Re: Ferrite Sleeve Loop antenna comments

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-22 13:42:24 UTC
From: ehydra
Topic: 316 Message: 322

Hi John -

What is a hour glass coil?
Where to find the picture?

Personally I found removable rod out of the coil a good idea.

- Henry

--
ehydra.dyndns.info

John Popelish schrieb:
> I have an AM tower, nearby. I use that as a standard signal
> source, wince I can read an antenna's output tuned to that
> frequency, directly with an AC RF millivoltmeter.
>
> Perhaps you will build a second unit, eventually. But I
> understand that 20 ferrite rods are quite an investment.
>
> Of course, if my predictions are correct, you could build a
> second unit with the rods you pull out of this one.
>
> As to the Q, did you see the photos if my hour glass coil
> (actually a pair of coils in parallel, with the grounded
> ends at the outside of the hour glass)? That was one of my
> highest Q rod antennas. I wonder of you would see similar
> results on your rod array.
>

323. Re: [ferriterodantennaexperimenters] Ferrite Sleeve Loop antenna comments

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-22 13:48:22 UTC
From: ehydra
Topic: 316 Message: 323

Hi Steve -

I'm not good in english. That is just the fact. Problem to speak about things I don't have english words for.

How do you define "ferrite sleeve antenna" ? An antenna out of several ferrite sleeves? Or an antenna where several rods define approximately a sleeve?

And why do you prefer a ferrite antenna over an e-field antenna? Is your work somewhere documentated?

- Henry

--
ehydra.dyndns.info

324. Re: [ferriterodantennaexperimenters] Ferrite Sleeve Loop antenna comments

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-22 14:25:21 UTC
From: ehydra
Topic: 316 Message: 324

Steve Ratzlaff schrieb:
> Hi Henry,
> Please, could you further comment on these things you wrote?
>
> What does "have the ferrite more distant in the ring" mean?

Divide a circumference into n equal lengths. You can locate n ferrite rods on the length ends.
Lower n, then you have fewer rod placement areas.

I must search for the paper about optimum rod displacement.

> What does "A
> single rod shapes the lines around it to a little extend of its own
> structure!" mean?

OK, I give up and make a picture...
http://ehydra.dyndns.info/NG/ferriterodantennaexperimenters/ferrite-rod.gif

> What does "If rods are lengthened by adding them serial,
> the hole must be minimized" mean?

Grind the ends with sand paper, then epoxy.

- Henry

--
ehydra.dyndns.info

325. Re: [ferriterodantennaexperimenters] Ferrite Sleeve Loop antenna comments

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-22 15:44:54 UTC
From: Steve Ratzlaff
Topic: 316 Message: 325

Hi Henry,
Thanks very much for clarifying what you were trying to communicate about the FSL--I understand now. I do appreciate your taking time to help me out with this.

There is a Yahoo group for small portable radios that can fit into a shirt or coat pocket, called "ultralight radio" (ULR) that has a class of listening for LF signals using just handheld antennas with these pocket radios. That's why I am interested in the ferrite sleeve antenna, and before that the Stormwise 18 inch long ferrite rod antenna. I know both those antennas are inferior to any decent outside antenna for LF reception. I have outside antennas--longwires, active whips, active loops--to choose from. But this specialty Yahoo ULR needs simpler antennas, so that's why I'm using them, plus I'm listening indoors with all the house noise.
73,
Steve

----- Original Message -----
From: "ehydra" <ehydra@...>
To: <ferriterodantennaexperimenters@yahoogroups.com>
Sent: Tuesday, February 22, 2011 6:25 AM
Subject: Re: [ferriterodantennaexperimenters] Ferrite Sleeve Loop antenna comments

> Steve Ratzlaff schrieb:
>> Hi Henry,
>> Please, could you further comment on these things you wrote?
>>
>> What does "have the ferrite more distant in the ring" mean?
>
> Divide a circumference into n equal lengths. You can locate n ferrite
> rods on the length ends.
> Lower n, then you have fewer rod placement areas.
>
> I must search for the paper about optimum rod displacement.
>
>
>> What does "A
>> single rod shapes the lines around it to a little extend of its own
>> structure!" mean?
>
> OK, I give up and make a picture...
> http://ehydra.dyndns.info/NG/ferriterodantennaexperimenters/ferrite-rod.gif
>

>
> > What does "If rods are lengthened by adding them serial,
>> the hole must be minimized" mean?
>
> Grind the ends with sand paper, then epoxy.
>
>
> - Henry
>
>
> --
> ehydra.dyndns.info

326. Re: [ferriterodantennaexperimenters] Ferrite Sleeve Loop antenna comments

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-22 16:33:18 UTC
From: ehydra
Topic: 316 Message: 326

If the antenna MUST BE minimum size I think one have to use ferrites, yes.

I'm interested about your high IMD e-antenna.

- Henry

--
ehydra.dyndns.info

Steve Ratzlaff schrieb:
> Hi Henry,
> Thanks very much for clarifying what you were trying to communicate about
> the FSL--I understand now. I do appreciate your taking time to help me out
> with this.
>
> There is a Yahoo group for small portable radios that can fit into a shirt
> or coat pocket, called "ultralight radio" (ULR) that has a class of
> listening for LF signals using just handheld antennas with these pocket
> radios. That's why I am interested in the ferrite sleeve antenna, and before
> that the Stormwise 18 inch long ferrite rod antenna. I know both those
> antennas are inferior to any decent outside antenna for LF reception. I
> have outside antennas--longwires, active whips, active loops--to choose
> from. But this specialty Yahoo ULR needs simpler antennas, so that's why I'm
> using them, plus I'm listening indoors with all the house noise.
> 73,
> Steve
>

327. Re: [ferriterodantennaexperimenters] Re: Ferrite Sleeve Loop antenna comments

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-22 17:05:40 UTC
From: John Popelish
Topic: 316 Message: 327

On 02/22/2011 08:42 AM, ehydra wrote:
> Hi John -
>
> What is a hour glass coil?
> Where to find the picture?
>
>
> Personally I found removable rod out of the coil a good idea.

There are several pictures of it and one of the stack of
ferrite beads that are taped together with spacers between
the beads in the groups photo section.
http://groups.yahoo.com/group/ferriterodantennaexperimenters/photos/album/0/list

My photo of the assembled antenna is in the Misc. folder by
jpopelish, called, 23" rod Hourglass coil MW.

lowalacrity has a folder called Ferroids that has a photo
called, Rod comparison test loops, that shows the bead stack
pulled from the coil.

The coil is made of yellow PVC insulated solid wire wound on
a foam form that is narrow at the center and larger at both
ends. I made this form by spinning the block of foam
against the side of a gallon paint can, covered with sand
paper (a crude lathe).

The bead stack and coil are described in message #68.

Go to the web page,
http://groups.yahoo.com/group/ferriterodantennaexperimenters/

click on messages in the upper right hand corner and then
enter 68 in the message number box an click Go. The coils
is actually two side-by-side windings, connected in parallel
(wound in opposite directions, outer ends connected, and
center ends connected), to make a more self shielding and
symmetrical, E-field canceling structure).

Lowalacrity's test report in in message #75.

Note that when you look at any message with the web page,
the complete thread of related messages is shown at the
bottom of the page.

--
Regards,

John Popelish

328. Re: [ferriterodantennaexperimenters] Re: Ferrite Sleeve Loop antenna comments

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-22 18:39:40 UTC
From: ehydra
Topic: 316 Message: 328

Thank you John! I now understand what is meant by hour-glass. Once I read that this should be optimal but I don't know if it is worth the effort. Curiosity, the "Maksimenko 1980.pdf" just desribes the antipodal.

One of your pictures show the attracted field lines more clearly: "Flux through ferrite rod"

Personally I prefer e-field antenna type. One thing I must test in the future would be how it performs with sky- and groundwave interference. Any thoughts?

- Henry

--
ehydra.dyndns.info

John Popelish schrieb:
> On 02/22/2011 08:42 AM, ehydra wrote:
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>>
>> What is a hour glass coil?
>> Where to find the picture?
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> lowalacrity has a folder called Ferroids that has a photo
> called, Rod comparison test loops, that shows the bead stack
> pulled from the coil.
>
> The coil is made of yellow PVC insulated solid wire wound on
> a foam form that is narrow at the center and larger at both
> ends. I made this form by spinning the block of foam
> against the side of a gallon paint can, covered with sand
> paper (a crude lathe).
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> The bead stack and coil are described in message #68.

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> Go to the web page,
> http://groups.yahoo.com/group/ferriterodantennaexperimenters/
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> click on messages in the upper right hand corner and then
> enter 68 in the message number box an click Go. The coils
> is actually two side-by-side windings, connected in parallel
> (wound in opposite directions, outer ends connected, and
> center ends connected), to make a more self shielding and
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> the complete thread of related messages is shown at the
> bottom of the page.
>

329. Re: [ferriterodantennaexperimenters] New ferrite loop configuration

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-22 20:16:07 UTC
From: Chris Trask
Topic: 313 Message: 329

```
>
> > I'm new to the group, but thought that this link which
> > appeared in a message on the ultralightdx group might be
> > of interest.
> >
> > It describes a new ferrite loop configuration that is
> > reported to be vastly superior to anything known in the
> > past.
> >
> > The loop description starts about 2/3 down the page
> > after the technical discussion.
> >
> > http://www.gmweb2.net/The%20FS%20Loop.htm
>
> I haven't read this in all its detail, but scanned through
> it. I think it is a good example of a person not being very
> well versed in the actual mathematics of electro-magnetic
> theory, but trying to use a conversational approximation of
> that theory to explain what they are seeing (especially in
> the discussion of permanent magnets). It is not surprising
> that they he has found such an approximate version of the
> theory to be lacking in predictive power.
>
```

<<SNIP>>

I actually think this is rather clever. He has unknowingly made use of the concept of "magnetic skin depth" to make a large diameter ferrite rod antenna, leaving out the ferrite material that normally does absolutely nothing except keep the whole thing rigid. Granted, it's a bit too short to be fully useful at low frequencies, but the basic idea is there. It just needs to be lengthened.

"Magnetic Skin Effect" is to magnetic material what "Skin Effect" is to electrical conductors, which is that the magnetic flux is concentrated in a thin layer along the outside surface of the material, and the "Magnetic Skin Depth" becomes thinner as the frequency is increased. You can look this up by way of Google to get the details.

John Popelish some time ago experimented with rod antennas using ferrite (or powdered iron?) toroids arranged on a wooden or plastic rod. It was intrigueing as it allows you to make ferrite antenna rods of any material and almost any size, rather than being limited to the very few commercial offerings available.

I would be curious to see how well a "Ferrite Sleeve Antenna" would work being made from ferrite bars instead of rods so that the outer surface is more mechanically uniform.

Chris Trask
N7ZWY / WDX3HLB
Senior Member IEEE
http://www.home.earthlink.net/~christrask/

330. Re: [ferriterodantennaexperimenters] Re: Ferrite Sleeve Loop antenna comments

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-22 22:44:42 UTC
From: John Popelish
Topic: 316 Message: 330

On 02/22/2011 01:39 PM, ehydra wrote:
> Thank you John! I now understand what is meant by hour-glass. Once I
> read that this should be optimal but I don't know if it is worth the effort.
> Curiosity, the "Maksimenko 1980.pdf" just desribes the antipodal.
>
>
> One of your pictures show the attracted field lines more clearly:
> "Flux through ferrite rod"

Keep in mind that that image was not derived from any
mathematical model, but is just an imagining.

> Personally I prefer e-field antenna type. One thing I must test in the
> future would be how it performs with sky- and groundwave interference.
> Any thoughts?

Not many. I have little experimental experience with any
antenna. The main and unchangeable difference between any
magnetic field antenna and electric field antennas is that
it is impossible to make a magnetic antenna that is non
directional for the ground wave.

--
Regards,

John Popelish

331. Re: [ferriterodantennaexperimenters] New ferrite loop configuration

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-23 00:22:48 UTC
From: ehydra
Topic: 313 Message: 331

Yes. A impeder style rod should work.
Simulate it with FEMM.

- Henry

--
ehydra.dyndns.info

Chris Trask schrieb:

>>> http://www.gmweb2.net/The%20FS%20Loop.htm
>> I haven't read this in all its detail, but scanned through
>> it. I think it is a good example of a person not being very
>> well versed in the actual mathematics of electro-magnetic
>> theory, but trying to use a conversational approximation of
>> that theory to explain what they are seeing (especially in
>> the discussion of permanent magnets). It is not surprising
>> that they he has found such an approximate version of the
>> theory to be lacking in predictive power.
>>
>
> <<SNIP>>
>
> I actually think this is rather clever. He has unknowingly made use of
> the concept of "magnetic skin depth" to make a large diameter ferrite rod
> antenna, leaving out the ferrite material that normally does absolutely
> nothing except keep the whole thing rigid. Granted, it's a bit too short to
> be fully useful at low frequencies, but the basic idea is there. It just
> needs to be lengthened.

>
> Chris Trask

332. Re: [ferriterodantennaexperimenters] Ferrite Sleeve Loop antenna comments

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-21 20:35:17 UTC
From: Pollock,Raphael E
Topic: 316 Message: 332

Hi Steve!

I have read the various mailings about the sleeve ferrite antenna, and I am very intrigued. Do you have some specific thoughts about the comparison of the sleeve versus the monster ferrite? Q, depth of nulls, # of stations per frequency, quality of audio, etc.?

Kevin is on vacation but he mentioned that he would be writing up his experiences--any early specific comparison impressions?

My concerns focus on cost/mechanical stability/weight. My monster ferrite weighs 2.1 lbs, can be easily transported, and has more gain most of the time than I can effectively use with a Satellit 750 or Sony 2010 when inductively coupled, and it doesn't help tremendously with my ultralight DSP receivers.

Thanks!

Raph

From: Steve Ratzlaff [mailto:steveratz@wildblue.net]
Sent: Monday, February 21, 2011 01:39 PM
To: ferriterodantennaexperimenters@yahoogroups.com
<ferriterodantennaexperimenters@yahoogroups.com>
Subject: [ferriterodantennaexperimenters] Ferrite Sleeve Loop antenna comments

I'm sorry but I was unable to decipher the meaning in Henry's previous technical comments about the ferrite sleeve antenna article. If he has built one and has a way to improve it, I would be very interested in learning the details. And of learning the URL to the Russian webpage with a similar article. I'm not qualified to comment on Graham Maynard's ideas of how the antenna is supposed to work.

But I built a ferrite sleeve loop (FSL) antenna several days ago, using a 4.5" diameter styrene plumbing coupler form and forty 3/8" x 8" 400 mu ferrite rods obtained from an overseas eBay seller, arranged around the form. I wound an LF coil with 60 turns of spaced windings using 5/36 small Litz wire that had about 1500 microhenries inductance. I used a small polyvaricon tuning capacitor to tune the 200-530 kHz NDB range. This antenna works incredibly well for something only 8" long, and is far superior to the Stormwise 18" 800 mu ferrite rod with LF coil that I had been using. The FSL weighs 7.8 pounds--not something you'd carry around as a handheld portable antenna but when used with a turntable to rotate it, sitting on a table, it works great.

I hope others will try building one and report their results. Unfortunately ferrite isn't inexpensive, even from the various overseas eBay sellers--the postage alone to USA is considerable, due to the weight.

73,
Steve

333. Re: [ferriterodantennaexperimenters] New ferrite loop configuration

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-22 20:51:54 UTC
From: Paul V Birke PEng
Topic: 313 Message: 333

Dear Chris et al herein

If you lengthen the device by sanding flat and glueing others on say one of either end of a Soviet 200mm u=400 you would have 600mm or about ~24" (which should be efficient and useable on BCB) you will need to place windings on all parts (mmf on each ferrite rod)

embarrassingly I found this out as a young engineer at Westinghouse Canada because as we introduce gap reluctances at the glue joints (ie the joints are finite dimension) WE MUST PROVIDE AMP-TURNS DRIVING (OR HERE RECEIVING) FORCE ON EACH ROD OF THE THREE IN SERIES

SO THIS IS A MUST IN MY BOOKS

ONE MAY WINDING DIRECTLY OVER THE FERRITE OR WITH A SMALL INSULATION GAP AND INSULATED LITZ

OTHERS SUCH AS YOU CHRIS AND JOHN WILL BE BEST COMMENTING ON THE NEED FOR A WIRE GAP OVER THE FERRITE OR JUST GO WITH THE WIRE INSULATION AS I AM GUESSING

taking John's suggestion of removing every other one in the circle is a good start to minimize the number of rods

I would think 3 rods is the minimum per circle therefore I would recommend 3 times this number

so looking at the circle we would have 9 rods evenly spaced over 360 degrees

we would have 3 rods glued per 9 in the circle for a total of 27 200 mm ferrite rods
again each of the 27 rods are a mmf generator to ensure minimum passage of the flux lines thru the material lengthwise

the sensitivity of the 9 per circle should be a good engineering compromise between only 3 and the maximum fill for a given circumference

best wishes to all
Paul

From: Chris Trask <christrask@...>
To: ferriterodantennaexperimenters@yahoogroups.com
Sent: Tue, February 22, 2011 3:16:07 PM
Subject: Re: [ferriterodantennaexperimenters] New ferrite loop configuration

>
> > I'm new to the group, but thought that this link which
> > appeared in a message on the ultralightdx group might be

> > of interest.
> >
> > It describes a new ferrite loop configuration that is
> > reported to be vastly superior to anything known in the
> > past.
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> I haven't read this in all its detail, but scanned through
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> well versed in the actual mathematics of electro-magnetic
> theory, but trying to use a conversational approximation of
> that theory to explain what they are seeing (especially in
> the discussion of permanent magnets). It is not surprising
> that they he has found such an approximate version of the
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<<SNIP>>

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John Popelish some time ago experimented with rod antennas using ferrite (or powdered iron?) toroids arranged on a wooden or plastic rod. It was intrigueing as it allows you to make ferrite antenna rods of any material and almost any size, rather than being limited to the very few commercial offerings available.

I would be curious to see how well a "Ferrite Sleeve Antenna" would work being made from ferrite bars instead of rods so that the outer surface is more mechanically uniform.

Chris Trask
N7ZWY / WDX3HLB
Senior Member IEEE
http://www.home.earthlink.net/~christrask

334. Re: [ferriterodantennaexperimenters] New ferrite loop configuration

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-23 11:10:02 UTC
From: ehydra
Topic: 313 Message: 334

Hm. What is the benefit of having such monsters? One you're over the receiver input stage noise figure, you cannot benefit of more signal but increase the possibility of IMD. That means decreasing the dynamic range!

I remember a paper where a whole helicopter was loaded with an monster ferrite structure. Maybe a CH-53 or such with 5 tons of ferrite. Must be very funny when money doesn't matter.

- Henry

--
ehydra.dyndns.info

Paul V Birke PEng schrieb:
> Dear Chris et al herein
>
> If you lengthen the device by sanding flat and glueing others on say one of
> either end of a Soviet 200mm u=400 you would have 600mm or about ~24" (which
> should be efficient and useable on BCB) you will need to place windings on all
> parts (mmf on each ferrite rod)
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> embarrassingly I found this out as a young engineer at Westinghouse Canada
> because as we introduce gap reluctances at the glue joints (ie the joints are
> finite dimension) WE MUST PROVIDE AMP-TURNS DRIVING (OR HERE RECEIVING) FORCE ON
> EACH ROD OF THE THREE IN SERIES
>
> SO THIS IS A MUST IN MY BOOKS
>
> ONE MAY WINDING DIRECTLY OVER THE FERRITE OR WITH A SMALL INSULATION GAP AND
> INSULATED LITZ
>
> OTHERS SUCH AS YOU CHRIS AND JOHN WILL BE BEST COMMENTING ON THE NEED FOR A WIRE
> GAP OVER THE FERRITE OR JUST GO WITH THE WIRE INSULATION AS I AM GUESSING
>
>
> taking John's suggestion of removing every other one in the circle is a good
> start to minimize the number of rods
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> I would think 3 rods is the minimum per circle therefore I would recommend 3
> times this number
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>
> so looking at the circle we would have 9 rods evenly spaced over 360 degrees
>
> we would have 3 rods glued per 9 in the circle for a total of 27 200 mm
> ferrite rods

> again each of the 27 rods are a mmf generator to ensure minimum passage of the
> flux lines thru the material lengthwise
>
> the sensitivity of the 9 per circle should be a good engineering compromise
> between only 3 and the maximum fill for a given circumference

335. Re: New ferrite loop configuration

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-23 15:20:41 UTC
From: Tom McKee
Topic: 313 Message: 335

Chris,

Thanks for the insight on magnetic skin depth. I had never had reason to think about that.

You also wrote: "I would be curious to see how well a "Ferrite Sleeve Antenna" would work being made from ferrite bars instead of rods so that the outer surface is more mechanically uniform."

One of the members of the UltralightDX group has done this and his message and photo information is at:

http://groups.yahoo.com/group/ultralightdx/message/13878

One may need to be a member of the group to view this. I will say that he was very enthusiastic about the results.

Tom McKee

==========
We Skype -- Visit our web sites:
Inland Marine Radio History Archive
GE Mobile Radio History
Swing Music Broadcasts
Joyce McKee's Art Gallery Page

336. Re: [ferriterodantennaexperimenters] Re: New ferrite loop configuration

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-23 15:40:51 UTC
From: Chris Trask
Topic: 313 Message: 336

```
>
> Thanks for the insight on magnetic skin depth. I had never had
> reason to think about that.
>
> You also wrote: "I would be curious to see how well a "Ferrite
> Sleeve Antenna" would work being made from ferrite bars instead
> of rods so that the outer surface is more mechanically uniform."
>
> One of the members of the UltralightDX group has done this and
> his message and photo information is at:
>
> http://groups.yahoo.com/group/ultralightdx/message/13878
>
> One may need to be a member of the group to view this. I will
> say that he was very enthusiastic about the results.
>
```

Looked at that message and joined the group. Wasn't aware of it until this thread showed up.

Chris

337. Re: [ferriterodantennaexperimenters] New ferrite loop configuration

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-23 16:20:46 UTC
From: Chris Trask
Topic: 313 Message: 337

>
> Hm. What is the benefit of having such monsters? One you're
> over the receiver input stage noise figure, you cannot benefit
> of more signal but increase the possibility of IMD. That means
> decreasing the dynamic range!
>

For stong signals, yes. But for weak signals this antenna could be very useful. Looking at the synopsis posted on the UltralightDX group, it seems that this antenna has appreciably better tuning Q than a comparable loop without the ferrite ring.

I'm looking at this from the perspective of being a ferrite-loaded electric field (ie - non-shielded) loop, and my impression is that this arrangement results in a ferrite-loaded electric field loop that can be considerably smaller. If you were to use Litz wire for the conductor, this should be an amazing performer for MW and LW DXing.

I'd love to try one of these if I could come up with a source for ferrite bars. Nothing available on eBay at the moment. What about using ferrite beads strung along the outside of a cylinder, much like macrame? Those beads can be bought very cheaply, and there's quite a few offerings on eBay. Just don't use a conductive wire to hold them all together.

>
> I remember a paper where a whole helicopter was loaded with an
> monster ferrite structure. Maybe a CH-53 or such with 5 tons of
> ferrite. Must be very funny when money doesn't matter.
>

Saw that many years ago. Similar to the first Kahlman antenna side-looking radars that they used on modified EC-135s in the second Persian Gulf War. Had to operate at a few degrees above absolute zero to minimize the losses and keet the Q up, so there was a huge refrigerator on board. The result was that they could almost read the serial numbers on the Iraqi tanks.

Chris

338. Re: [ferriterodantennaexperimenters] New ferrite loop configuration

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-23 17:11:01 UTC
From: ehydra
Topic: 313 Message: 338

Hi Chris -

The problem is that I cannot find that papers I referenced here. Sorry. Even after serious looking at the hard-disk. Papers with funny names get lost. Papers with scanning image only get lost. Henry gets lost... Anyway.

Yes, you can chain-gang ferrite beads. Must be below ur'' corner frequency. I thought you're the expert for such.

An interesting experiment is to make a single-turn coil out of thin copper sheet around the stick. Works. see Motorola pager patents.

All is done before.

Wondering -
Henry

--
ehydra.dyndns.info

Chris Trask schrieb:
>> Hm. What is the benefit of having such monsters? One you're over
>> the receiver input stage noise figure, you cannot benefit of more
>> signal but increase the possibility of IMD. That means decreasing
>> the dynamic range!
>>
>
> For stong signals, yes. But for weak signals this antenna could be
> very useful. Looking at the synopsis posted on the UltralightDX
> group, it seems that this antenna has appreciably better tuning Q
> than a comparable loop without the ferrite ring.
>
> I'm looking at this from the perspective of being a ferrite-loaded
> electric field (ie - non-shielded) loop, and my impression is that
> this arrangement results in a ferrite-loaded electric field loop that
> can be considerably smaller. If you were to use Litz wire for the
> conductor, this should be an amazing performer for MW and LW DXing.
>
> I'd love to try one of these if I could come up with a source for
> ferrite bars. Nothing available on eBay at the moment. What about
> using ferrite beads strung along the outside of a cylinder, much like
> macrame? Those beads can be bought very cheaply, and there's quite a
> few offerings on eBay. Just don't use a conductive wire to hold them
> all together.
>
>> I remember a paper where a whole helicopter was loaded with an

>> monster ferrite structure. Maybe a CH-53 or such with 5 tons of
>> ferrite. Must be very funny when money doesn't matter.
>>
>
> Saw that many years ago. Similar to the first Kahlman antenna
> side-looking radars that they used on modified EC-135s in the second
> Persian Gulf War. Had to operate at a few degrees above absolute
> zero to minimize the losses and keet the Q up, so there was a huge
> refrigerator on board. The result was that they could almost read
> the serial numbers on the Iraqi tanks.
>
> Chris

339. Ferrite Sleeve Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-23 18:06:19 UTC
From: Chris Trask
Topic: 339 Message: 339

>
> The problem is that I cannot find that papers I referenced here. Sorry.
> Even after serious looking at the hard-disk. Papers with funny names get
> lost. Papers with scanning image only get lost. Henry gets lost...
> Anyway.
>

If you can recall the details (title, author) I might have them.

>
> Yes, you can chain-gang ferrite beads. Must be below ur'' corner
> frequency. I thought you're the expert for such.
>

Depending on the operating frequency, there are lots and lots to choose from. But, refrain from using Fair-Rite 43 material as it is far lossier than any of the others out there. Fair-Rite 61 would work best for HF, 65 material for MW, and 77 material is usable up to 1MHz. I'll have to look into others later.

>
> An interesting experiment is to make a single-turn coil out of thin
> copper sheet around the stick. Works. see Motorola pager patents.
>

I'm wondering if this would be a suitable antenna for using ribbon cable? For HF frequencies the stuff is a mild train wreck as the interwire capacitances due to the insulation really ruins the performance. The interwire capacitances create a transmission null in the performance, and the insulation causes a degree of losses at higher frequencies. But it might just work for a small diameter MW or LW ferrite sleeve antenna.

I'm going to visit my local tech junk yard and see what they have for ferrite beads. I know they have some, and maybe I can buy them by the pound.

Chris

340. Russian Ferrite Bars

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-23 20:41:41 UTC
From: Chris Trask
Topic: 340 Message: 340

Has anyone experimented with these ferrite bars:

<
http://cgi.ebay.ca/NOS-Ferrite-M400HH-D-11-bars-100x20x3-mm-Lot-12-/250586263177?pt=LH_DefaultDomain_0&hash=item3a581aee89>

They look interesting and are affordable. There are others available by way of:

http://www.repich.com/ferrite+bar-02-0.html

but I cannot find out anything about the ferrite material(s).

Chris

341. Re: Russian Ferrite Bars

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-24 04:29:37 UTC
From: jpopelish
Topic: 340 Message: 341

---"Chris Trask" <christrask@...> wrote:
>
> Has anyone experimented with these ferrite bars:
>
> <
> http://cgi.ebay.ca/NOS-Ferrite-M400HH-D-11-bars-100x20x3-mm-Lot-12-/250586263177
>
> They look interesting and are affordable. There are others available by
> way of:
>
> http://www.repich.com/ferrite+bar-02-0.html
>
> but I cannot find out anything about the ferrite material(s).

I get the impression (but I can't now justify it) that the number refers to the initial permeability. I think this was from some ungapped pot cores and their Al values.

If so, 400u would make these something like Fair-Rite NiZn type 51:
http://www.fair-rite.com/newfair/materials51.htm

There are some MnZn ferrites in this permeability range,
like Fair-Rite type 46:

http://www.fair-rite.com/newfair/materials46.htm

but they are very lossy stuff intended for EMI suppression, and these look like antenna bars.

--
Regards,

John Popelish

342. Re: [ferriterodantennaexperimenters] Ferrite Sleeve Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-25 21:50:06 UTC
From: ehydra
Topic: 339 Message: 342

Chris Trask schrieb:
>> The problem is that I cannot find that papers I referenced here. Sorry.
>> Even after serious looking at the hard-disk. Papers with funny names get
>> lost. Papers with scanning image only get lost. Henry gets lost...
>> Anyway.
>>
>
> If you can recall the details (title, author) I might have them.

If I would remember them, I would find them with Google. Thanks anyway.

>
>> Yes, you can chain-gang ferrite beads. Must be below ur'' corner
>> frequency. I thought you're the expert for such.
>>
>
> Depending on the operating frequency, there are lots and lots to choose
> from. But, refrain from using Fair-Rite 43 material as it is far lossier
> than any of the others out there. Fair-Rite 61 would work best for HF, 65
> material for MW, and 77 material is usable up to 1MHz. I'll have to look
> into others later.
>

This maybe interesting:
Co2Z Hexaferrite T-DMB Antenna for Mobile Phone Applications
http://webs.wichita.edu/depttools/depttoolsmemberfiles/ECE/Kwon%2520Wireless/Journal%2520Publications/09Nov.pdf

And this funny thing:
http://jre.cplire.ru/alt/june99/1/text.html

>> An interesting experiment is to make a single-turn coil out of thin
>> copper sheet around the stick. Works. see Motorola pager patents.
>>
>
> I'm wondering if this would be a suitable antenna for using ribbon
> cable? For HF frequencies the stuff is a mild train wreck as the interwire
> capacitances due to the insulation really ruins the performance. The
> interwire capacitances create a transmission null in the performance, and
> the insulation causes a degree of losses at higher frequencies. But it
> might just work for a small diameter MW or LW ferrite sleeve antenna.

At least I saw such designs. One can tap every turn for easy experimenting.

Once in time I saw a ribbon cable of special structure. The wires are
periodical interchanged to have the impedance where uniform. What is the
correct name for it? I think it was on an early IBM hard-disk - big like

a refrigerator.

>
> I'm going to visit my local tech junk yard and see what they have for
> ferrite beads. I know they have some, and maybe I can buy them by the
> pound.
>

And you characterize it yourself?

- Henry

--
ehydra.dyndns.info

343. Re: [ferriterodantennaexperimenters] Ferrite Sleeve Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-26 02:58:21 UTC
From: John Kolb
Topic: 339 Message: 343

Lots of hits on Google searching for "twisted ribbon cable". Here's a picture-
twisted with occasional straight sections for easy connection to connectors
http://www.google.com/imgres?imgurl=http://www.computercableinc.com/ccinc/images/BULK-CABL
E-Twisted-Pair-Ribbon-IEC-CAB050-RI-TW.jpg&imgrefurl=http://www.computercableinc.com/ccinc
/bulkcable.jsp%3Fsub%3DFlat%2BRibbon%2BCable&h=162&w=216&sz=14&tbnid=VKEa9kIZ-Tz0cM:&tbnh=
80&tbnw=107&prev=/images%3Fq%3Dtwisted%2Bribbon%2Bcable&zoom=0&q=twisted+ribbon+cable&hl=e
n&usg=__owsAe_o_tkfLMLD9vIBjG1Us3Eg=&sa=X&ei=JGloTYuiM8OBlAfp4JGCAg&ved=0CEgQ9QEwBQ

John

At 01:50 PM 2/25/2011, you wrote:
>Chris Trask schrieb:
> >> The problem is that I cannot find that papers I referenced here. Sorry.
> >> Even after serious looking at the hard-disk. Papers with funny names get
> >> lost. Papers with scanning image only get lost. Henry gets lost...
> >> Anyway.
> >>
> >
> > If you can recall the details (title, author) I might have them.
>
>If I would remember them, I would find them with Google. Thanks anyway.
>
>
> >
> >> Yes, you can chain-gang ferrite beads. Must be below ur'' corner
> >> frequency. I thought you're the expert for such.
> >>
> >
> > Depending on the operating frequency, there are lots and lots to choose
> > from. But, refrain from using Fair-Rite 43 material as it is far lossier
> > than any of the others out there. Fair-Rite 61 would work best for HF, 65
> > material for MW, and 77 material is usable up to 1MHz. I'll have to look
> > into others later.
> >
>
>This maybe interesting:
>Co2Z Hexaferrite T-DMB Antenna for Mobile Phone Applications
>http://webs.wichita.edu/depttools/depttoolsmemberfiles/ECE/Kwon%2520Wireless/Journal%2520
Publications/09Nov.pdf
>
>And this funny thing:
>http://jre.cplire.ru/alt/june99/1/text.html
>
>
> >> An interesting experiment is to make a single-turn coil out of thin

> >> copper sheet around the stick. Works. see Motorola pager patents.
> >>
> >
> > I'm wondering if this would be a suitable antenna for using ribbon
> > cable? For HF frequencies the stuff is a mild train wreck as the interwire
> > capacitances due to the insulation really ruins the performance. The
> > interwire capacitances create a transmission null in the performance, and
> > the insulation causes a degree of losses at higher frequencies. But it
> > might just work for a small diameter MW or LW ferrite sleeve antenna.
>
>At least I saw such designs. One can tap every turn for easy experimenting.
>
>Once in time I saw a ribbon cable of special structure. The wires are
>periodical interchanged to have the impedance where uniform. What is the
>correct name for it? I think it was on an early IBM hard-disk - big like
>a refrigerator.
>
>
> >
> > I'm going to visit my local tech junk yard and see what they have for
> > ferrite beads. I know they have some, and maybe I can buy them by the
> > pound.
> >
>
>And you characterize it yourself?
>
>- Henry
>
>--
>ehydra.dyndns.info
>
>
>----------
>
>Yahoo! Groups Links
>
>
>

344. Re: [ferriterodantennaexperimenters] Ferrite Sleeve Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-26 13:26:49 UTC
From: ehydra
Topic: 339 Message: 344

Ah, Twisted ist the right word. Yes, looks very similar. The IBM cable
looked like hand-made like soks. The twisting was on the whole cable
consisting of separated <rainbowed> wires.

- Henry

--
ehydra.dyndns.info

John Kolb schrieb:
> Lots of hits on Google searching for "twisted ribbon cable". Here's a picture-
> twisted with occasional straight sections for easy connection to connectors
> http://www.google.com/imgres?imgurl=http://www.computercableinc.com/ccinc/images/BULK-CABLE-Twisted-Pair-Ribbon-IEC-CAB050-RI-TW.jpg&imgrefurl=http://www.computercableinc.com/ccinc/bulkcable.jsp%3Fsub%3DFlat%2BRibbon%2BCable&h=162&w=216&sz=14&tbnid=VKEa9kIZ-Tz0cM:&tbnh=80&tbnw=107&prev=/images%3Fq%3Dtwisted%2Bribbon%2Bcable&zoom=0&q=twisted+ribbon+cable&hl=en&usg=__owsAe_o_tkfLMLD9vIBjG1Us3Eg=&sa=X&ei=JGloTYuiM8OBlAfp4JGCAg&ved=0CEgQ9QEwBQ
>
> John
>> Once in time I saw a ribbon cable of special structure. The wires are
>> periodical interchanged to have the impedance where uniform. What is the
>> correct name for it? I think it was on an early IBM hard-disk - big like
>> a refrigerator.

345. Re: [ferriterodantennaexperimenters] Ferrite Sleeve Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-26 15:05:17 UTC
From: Chris Trask
Topic: 339 Message: 345

```
>
>
> This maybe interesting:
> Co2Z Hexaferrite T-DMB Antenna for Mobile Phone Applications
> http://webs.wichita.edu/depttools/depttoolsmemberfiles/ECE/Kwon%2520Wireless/Journal%252
0Publications/09Nov.pdf
>
```

Couldn't get that. Could you send me a copy?

```
>
> >
> > I'm going to visit my local tech junk yard and see what
> > they have for ferrite beads. I know they have some, and
> > maybe I can buy them by the pound.
> >
>
> And you characterize it yourself?
>
```

Yes, I can make a rough estimate. But, I've set that idea off to the side for now since I found suitable ferrite rods on eBay. Going to have to look at what I can afford in my budget for those.

Chris

346. Re: [ferriterodantennaexperimenters] Ferrite Sleeve Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-26 18:29:34 UTC
From: ehydra
Topic: 339 Message: 346

Looks like they changed the path:
http://webs.wichita.edu/depttools/depttoolsmemberfiles/ECE/Kwon%20Wireless/Journal%20Publications/09Nov.pdf

Try it, otherwise contact me again and I send it to you.

- Henry

--
ehydra.dyndns.info

Chris Trask schrieb:
>>
>> This maybe interesting:
>> Co2Z Hexaferrite T-DMB Antenna for Mobile Phone Applications
>> http://webs.wichita.edu/depttools/depttoolsmemberfiles/ECE/Kwon%2520Wireless/Journal%2520Publications/09Nov.pdf
>>
>
> Couldn't get that. Could you send me a copy?

347. Re: [ferriterodantennaexperimenters] Ferrite Sleeve Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-26 19:08:37 UTC
From: Chris Trask
Topic: 339 Message: 347

```
>
> Looks like they changed the path:
>
http://webs.wichita.edu/depttools/depttoolsmemberfiles/ECE/Kwon%20Wireless/J
ournal%20Publications/09Nov.pdf
>
> Try it, otherwise contact me again and I send it to you.
>
```

Got it that time.

Chris

348. optimized ferrite sleeve antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-26 18:29:19 UTC
From: pvbirke
Topic: 348 Message: 348

I have uploaded a ppt file showing an enhanced version of the current single coil ferrite sleeve antenna

Herein, a second coil is added on the inside and connected such that both inside and outside ferrite flat rod see the magnetic field in the same direction

I have preserved the idea the the ferrite extends somewhat past the ends of the windings and I have kept the near optimal found 5 mm spacings both sides of the ferrite to obtain High Q

True optimization of this design concept of Graham will require more innovation and measurement.

For instance it is unclear to me how incoming "RF Photons" engage the antenna and how this might be best optimized

best wishes
Paul

349. optimized ferrite sleeve antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-26 19:59:48 UTC
From: pvbirke
Topic: 348 Message: 349

I have annotated the ppt slide and provided a guess of the plot of Q against winding to ferrite surface spacing as requested by Chris Trask

Hoping the idea of inside and outside winding ferrite sleeve antenna is clearer now

thanks Chris

Paul in Guelph

350. Re: Ferrite Sleeve Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-28 17:38:21 UTC
From: lowalacrity
Topic: 339 Message: 350

Hi all,
I've been following the FS loop threads for the last week, but was out of town. Upon my return, I slapped a dozen of the impeder rods I had obtained from John P. on a wooden form. I wound 24 turns of some some #16 just to see how it worked tuning the AM BCB. With just my initial tests last night, (comparing performance against a single rod loop) I was impressed enough to order some litz wire. Eleven inch circum. so 25 ft should be adequate. See pictures of my crude testbed in my Impeder rod loops album. I plan on building a very simple test receiver based on the IC TA7642, (similar to MK484). The idea is to use to better measure performance of various tuned loops. More on that when parts arrive. Litz coming from Canada, IC radio parts from Asia. Stay tuned!

John

351. Re: [ferriterodantennaexperimenters] Re: Ferrite Sleeve Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2011-02-28 18:19:26 UTC
From: Chris Trask
Topic: 339 Message: 351

>
> I've been following the FS loop threads for the last week, but was out
> of town. Upon my return, I slapped a dozen of the impeder rods I had
> obtained from John P. on a wooden form. I wound 24 turns of some some
> #16 just to see how it worked tuning the AM BCB. With just my initial
> tests last night, (comparing performance against a single rod loop) I
> was impressed enough to order some litz wire. Eleven inch circum. so
> 25 ft should be adequate. See pictures of my crude testbed in my
> Impeder rod loops album. I plan on building a very simple test receiver
> based on the IC TA7642, (similar to MK484). The idea is to use to
> better measure performance of various tuned loops. More on that when
> parts arrive. Litz coming from Canada, IC radio parts from Asia.
> Stay tuned!
>

I'll be loosening the purse strings begore long and buy a lot of those
65mm long rods from Lithuania, then take a close look at the basket-weave
version.

Chris Trask
N7ZWY / WDX3HLB
Senior Member IEEE
http://www.home.earthlink.net/~christrask/

352. Re: [ferriterodantennaexperimenters] New ferrite loop configuration

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-04 18:52:55 UTC
From: Chris Trask
Topic: 313 Message: 352

>
> I haven't read this in all its detail, but scanned through
> it. I think it is a good example of a person not being very
> well versed in the actual mathematics of electro-magnetic
> theory, but trying to use a conversational approximation of
> that theory to explain what they are seeing (especially in
> the discussion of permanent magnets). It is not
> surprising that they he has found such an approximate
> version of the theory to be lacking in predictive power.
>
> This fellow also demonstrates that many different hypotheses
> can fit the data, especially if you are not looking very
> closely (quantitatively) and not working to specifically
> disprove his own pet hypothesis as the scientific method
> requires. I, see no where in this article, where he ever
> considers what experimental result would most clearly
> falsify his own hypotheses, so that those results could be
> searched for.
>

I found by way of another group that he has a limitless ability to create new physics theories to explain what he thinks he has done, while at the same time dismissing established theory. REminds me of a certain fellow in Georgia.

The ferrite sleeve loop (FSL) is an interesting idea, but I wonder if the short aspect ratio is depriving the concept of a greater potential.

Thinking about this returned me to a discussion of a year or two ago about assembling a ferrite rod with toroids on an insulated (plastic or wood) rod. The concept is essentially the same, making use of the fact that the magnetic flux is confined to a thin surface layer of the magnetic material while the rest of the rod goes to waste.

With that in mind I looked around and found that Mouser still carries the large ferrite beads (they call them EMI suppression cores) made by Fair-Rite. They have the 1.020x.505x1.125 (ODxIDxL) size in -31 (VLF, LW, MW), -43 (MW, HF), and -61 (HF, VHF) material and up to 2.400x1.400x.500 in -43 material. These may be a less expensive alternative to using toroids or a solid rod.

Chris Trask
N7ZWY / WDX3HLB
Senior Member IEEE
http://www.home.earthlink.net/~christrask/

> I also wonder if he has ever considered the speed of light,
> at the frequencies involved in his experiments, inside
> highly (and variably with frequency) permeable and pretty
> high permitivity (and variable with frequency) ferrite
> material. The speed of light is a constant only in a vacuum.
>
> I like his experimental enthusiasm, though.
>
> --
> Regards,
>
> John Popelish
>
>
> ----------
>
> Yahoo! Groups Links
>
>
>

353. Re: [ferriterodantennaexperimenters] New ferrite loop configuration

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-04 20:39:01 UTC
From: ehydra
Topic: 313 Message: 353

Running FEMM one can see that indeed the flux is concentrated just under the surface. So this makes sense.

If μ rises, the skin depth is thinner! The better the material in μ aspect, the thinner the sleeve can be. It is for me an open question what would be the calculus for define tickness of the wall dependent on specific μ.
So it is maybe worth an experiment to get fat iron-powder rods/sleeves. Should have lower μ but then deeper skin depth -> bigger active surface!

So what is the optimum?

Here is an example I made 3,5 years ago made with FEMM 4.0.1 by David Meeker. I must say that I almost completely forgot what I've done at that time:

It is a sleeve with a copper-foil single-turn coil. The picture shows the right half side AND at the same time the upper end only (because it is double-symmetric!). One can see:
1. the flux at the ends coming out.
2. flux located under the copper foil (the foil is the rectangle on the right with it's thickness) but blocked by the foil layer!
3. The concentration just under the surface because of the magnetic skin depth (I guess I used some iron-powder core so the skin depth is very broad and the working frequency was 6.8MHz as stated in the project-file!)

Beware that the coil was configured as transmitter. I was unable to got it as an receiver circuit just of personal knowledge how to configure the whole scene. But this should not give a problem here.

Have fun Chris Trask and John Popelish! I think this is what you wanted and I referenced somewhere.

All project file included!
http://ehydra.dyndns.info/NG/ferriterodantennaexperimenters/sleeve/compare%20sleeve%20multi-toroid%20(sleeve)%20annotated.gif
http://ehydra.dyndns.info/NG/ferriterodantennaexperimenters/sleeve/

Use the zip-file if got problems with spaces in URL.

- Henry

--
ehydra.dyndns.info

Chris Trask schrieb:
> With that in mind I looked around and found that Mouser still carries
> the large ferrite beads (they call them EMI suppression cores) made by

> Fair-Rite. They have the 1.020x.505x1.125 (ODxIDxL) size in -31 (VLF, LW,
> MW), -43 (MW, HF), and -61 (HF, VHF) material and up to 2.400x1.400x.500
> in -43 material. These may be a less expensive alternative to using toroids
> or a solid rod.

354. Re: [ferriterodantennaexperimenters] New ferrite loop configuration

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-04 21:09:40 UTC
From: John Popelish
Topic: 313 Message: 354

On 03/04/2011 03:39 PM, ehydra wrote:
> Running FEMM one can see that indeed the flux is concentrated just under
> the surface. So this makes sense.
>
> If Âµ rises, the skin depth is thinner! The better the material in Âµ
> aspect, the thinner the sleeve can be. It is for me an open question
> what would be the calculus for define tickness of the wall dependent on
> specific Âµ.
> So it is maybe worth an experiment to get fat iron-powder rods/sleeves.
> Should have lower Âµ but then deeper skin depth -> bigger active surface!
>
> So what is the optimum?
>
>
> Here is an example I made 3,5 years ago made with FEMM 4.0.1 by David
> Meeker. I must say that I almost completely forgot what I've done at
> that time:
>
> It is a sleeve with a copper-foil single-turn coil. The picture shows
> the right half side AND at the same time the upper end only (because it
> is double-symmetric!). One can see:
> 1. the flux at the ends coming out.
> 2. flux located under the copper foil (the foil is the rectangle on the
> right with it's thickness) but blocked by the foil layer!
> 3. The concentration just under the surface because of the magnetic skin
> depth (I guess I used some iron-powder core so the skin depth is very
> broad and the working frequency was 6.8MHz as stated in the project-file!)
>
> Beware that the coil was configured as transmitter. I was unable to got
> it as an receiver circuit just of personal knowledge how to configure
> the whole scene. But this should not give a problem here.
>
> Have fun Chris Trask and John Popelish! I think this is what you wanted
> and I referenced somewhere.
>
> All project file included!
> http://ehydra.dyndns.info/NG/ferriterodantennaexperimenters/sleeve/compare%20sleeve%20mu
lti-toroid%20(sleeve)%20annotated.gif
> http://ehydra.dyndns.info/NG/ferriterodantennaexperimenters/sleeve/
>
> Use the zip-file if got problems with spaces in URL.

Good stuff to help me visualize a sleeve antenna. Of
course, most of the flux shown in that cross section would
be near field, with only a tiny fraction becoming actual

radiation. I guess you would have to come up with a far field radiation background pattern, to see how this combination would receive energy from that radiation field. The load on the coil would also play a large part in the result. But, I must say, that I don't see anything like a magnetic skin depth in these simulations. All I see is more flux closer to the current generating it.

Do you still have this FEMM program to play with? A few years ago, I just began the long learning curve involved in using one of those. Setting up the initial conditions was always harder for me than modeling the core and coil under test in that specific environment. Also, mine just did steady state (DC), not RF.

--
Regards,

John Popelish

355. Re: [ferriterodantennaexperimenters] New ferrite loop configuration

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-04 21:46:23 UTC
From: ehydra
Topic: 313 Message: 355

Hi John -

At the moment I don't know why I preferred this prog. I tested severals. I remember my better skin depth example. But where? As I mentioned it was a iron-powder core at 6.8MHz. One of the micrometals. ur is relatively very low for this stuff!

This antenna radiated so bad as multi-turn coiled that I completely was unsatisfied. The ferrite version was way better.

Try it yourself. I welcome your outputs!

I think this googled is the right:
http://www.femm.info/wiki/ReadMe42

- Henry

--
ehydra.dyndns.info

John Popelish schrieb:
> course, most of the flux shown in that cross section would
> be near field, with only a tiny fraction becoming actual
> radiation. I guess you would have to come up with a far
> field radiation background pattern, to see how this
> combination would receive energy from that radiation field.
> The load on the coil would also play a large part in the
> result. But, I must say, that I don't see anything like a
> magnetic skin depth in these simulations. All I see is more
> flux closer to the current generating it.
>
> Do you still have this FEMM program to play with? A few
> years ago, I just began the long learning curve involved in
> using one of those. Setting up the initial conditions was
> always harder for me than modeling the core and coil under
> test in that specific environment. Also, mine just did
> steady state (DC), not RF.
>

356. Re: Ferrite Sleeve Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-10 16:04:14 UTC
From: lowalacrity
Topic: 339 Message: 356

--- In ferriterodantennaexperimenters@yahoogroups.com, "lowalacrity" <jcstumm@...> wrote:
>Good news! I received the litz for my impeder rod assembly and, after winding it, 28 turns, evenly spaced 1/4" across the rods, I tried a quick test. Verifing it did tune the BCB with a variable cap, I attached a detector diode and earphone and achieved a first! I was able to pick up stations with a stand alone ferrite loop! With that encouraging result, I will try it out with my palomar amp today...
>
>
> Hi all,
> I've been following the FS loop threads for the last week, but was out of town. Upon my return, I slapped a dozen of the impeder rods I had obtained from John P. on a wooden form. I wound 24 turns of some some #16 just to see how it worked tuning the AM BCB. With just my initial tests last night, (comparing performance against a single rod loop) I was impressed enough to order some litz wire. Eleven inch circum. so 25 ft should be adequate. See pictures of my crude testbed in my Impeder rod loops album. I plan on building a very simple test receiver based on the IC TA7642, (similar to MK484). The idea is to use to better measure performance of various tuned loops. More on that when parts arrive. Litz coming from Canada, IC radio parts from Asia. Stay tuned!
>
> John
>

357. Re: Ferrite Sleeve Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-11 14:02:10 UTC
From: aircheckclover
Topic: 339 Message: 357

Hi John;

FYI - in case you don't know - the Yahoo Group called Ultralight DX has several people working on FSL antennas with variations on the original theme proving interesting and advancing the science/art.
-Mark

++++++++++++++++++++++++++++++++++++++

--- In ferriterodantennaexperimenters@yahoogroups.com, "lowalacrity" <jcstumm@...> wrote:
>
>
>
> --- In ferriterodantennaexperimenters@yahoogroups.com, "lowalacrity" <jcstumm@> wrote:
> >Good news! I received the litz for my impeder rod assembly and, after winding it, 28 turns, evenly spaced 1/4" across the rods, I tried a quick test. Verifing it did tune the BCB with a variable cap, I attached a detector diode and earphone and achieved a first! I was able to pick up stations with a stand alone ferrite loop! With that encouraging result, I will try it out with my palomar amp today...
> >
> >
> > Hi all,
> > I've been following the FS loop threads for the last week, but was out of town. Upon my return, I slapped a dozen of the impeder rods I had obtained from John P. on a wooden form. I wound 24 turns of some some #16 just to see how it worked tuning the AM BCB. With just my initial tests last night, (comparing performance against a single rod loop) I was impressed enough to order some litz wire. Eleven inch circum. so 25 ft should be adequate. See pictures of my crude testbed in my Impeder rod loops album. I plan on building a very simple test receiver based on the IC TA7642, (similar to MK484). The idea is to use to better measure performance of various tuned loops. More on that when parts arrive. Litz coming from Canada, IC radio parts from Asia. Stay tuned!
> >
> > John
> >
>

358. Re: [ferriterodantennaexperimenters] Re: Ferrite Sleeve Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-11 14:08:47 UTC
From: Chris Trask
Topic: 339 Message: 358

```
>
> FYI - in case you don't know - the Yahoo Group called
> Ultralight DX has several people working on FSL antennas
> with variations on the original theme proving interesting
> and advancing the science/art.
>
```

You might want to avoid that group for now. The moderator is booting people out at even the slightest hint of criticism. Plus that Graham Maynard fellow is sending scathing emails to anyone who does so. He claims that he has rendered all former knowledge of EM and physics obsolete.

It would be better to discuss it in a far less biased forum such as this one here.

Chris Trask
N7ZWY / WDX3HLB
Senior Member IEEE
http://www.home.earthlink.net/~christrask/

359. Re: Ferrite Sleeve Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-11 16:01:00 UTC
From: lowalacrity
Topic: 339 Message: 359

That's definately a spirited forum over there! A lot of good info already archived on a subject better served over here. I joined but may not "wade in" just yet. Good turn on though. FYI, My litz is 100/35 and is appears to complement my 6 lb core. Is it overkill or maybe more suited to the LF region? My initial tests apprear to say no. My next test will involve coupling it to my stock Palomar amp and comparing it to a couple single rod litz wound, (660/46) "Stormwise" length antenna heads. I also use a Quantum QX amplified loop as a reference for overall performance. a knife switch makes for quick switches into my Satellit 800. Nothing has quite supassed the Quantum's performance - as yet. We shall see...

John

--- In ferriterodantennaexperimenters@yahoogroups.com, Chris Trask <christrask@...> wrote:
>
> >
> > FYI - in case you don't know - the Yahoo Group called
> > Ultralight DX has several people working on FSL antennas
> > with variations on the original theme proving interesting
> > and advancing the science/art.
> >
>
> You might want to avoid that group for now. The moderator is booting people out at even the slightest hint of criticism. Plus that Graham Maynard fellow is sending scathing emails to anyone who does so. He claims that he has rendered all former knowledge of EM and physics obsolete.
>
> It would be better to discuss it in a far less biased forum such as this one here.
>
>
> Chris Trask
> N7ZWY / WDX3HLB
> Senior Member IEEE
> http://www.home.earthlink.net/~christrask/
>

360. Re: [ferriterodantennaexperimenters] Re: Ferrite Sleeve Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-11 16:13:31 UTC
From: Chris Trask
Topic: 339 Message: 360

```
>
> That's definately a spirited forum over there! A lot of good
> info already archived on a subject better served over here.
>
```

I would like to see it discussed here where we can do away with the pseudoscience "everything you know is wrong" approach. Some of the people on that list aren't even connecting it to the receiver, just positioning around the whip antenna. Or at least that's what they've been describing.

```
>
> FYI, My litz is 100/35 and is appears to complement my 6 lb
> core. Is it overkill or maybe more suited to the LF region?
> My initial tests apprear to say no.
>
```

I have a few odds and ends of Litz wire here, but nothing with that strand count.

Chris

361. RE: [ferriterodantennaexperimenters] Re: Ferrite Sleeve Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-11 16:22:02 UTC
From: Pollock,Raphael E
Topic: 339 Message: 361

Dear John: I am eager to see how your Stormwise antenna heads perform. I have made a 19" and a 27" ferrite bar antenna using the Stormwise 125 mu ferrite bars and 660/46 Litz. The Q is quite sharp, the gain is large, the nulls are deep, and both perform at about the same level overall. I made the 27"er to use with my Eton E1, and have a broadband RF amplifier-an old BAX-1 from 25 years ago-the antenna does not pick up more stations with the additional amplification. My preference is actually to use the 19" antenna inductively coupled to my Satellit 750, so I can manipulate RF gain, volume, Q, and rotation-no altazimuth adjustments possible, however, given the direct coupling. I am not sure how much additional benefit the Ferrite Sleeve antennas will bring to my ability to hear distant MW stations. I am awaiting the results of the experiments being conducted by Kevin and Steve of ultralight fame before trying my hand at a ferrite sleeve antenna. For the money, I am tempted to purchase the Pixel Pro antenna, although $400 is a lot of $ and I really enjoy the experimenting and building myself. I am not a good enough EE to flush out all of the various parameters, so will await the results of the work of the other folks. Meanwhile, it is great fun to stand on the sidelines and watch all the great philosophy, theology, and even science being bantered about on both sides of the Atlantic!!

I eagerly await your results!!

Raph Pollock

From: ferriterodantennaexperimenters@yahoogroups.com
[mailto:ferriterodantennaexperimenters@yahoogroups.com] On Behalf Of lowalacrity
Sent: Friday, March 11, 2011 10:01 AM
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: [ferriterodantennaexperimenters] Re: Ferrite Sleeve Antenna

That's definately a spirited forum over there! A lot of good info already archived on a subject better served over here. I joined but may not "wade in" just yet. Good turn on though. FYI, My litz is 100/35 and is appears to complement my 6 lb core. Is it overkill or maybe more suited to the LF region? My initial tests apprear to say no. My next test will involve coupling it to my stock Palomar amp and comparing it to a couple single rod litz wound, (660/46) "Stormwise" length antenna heads. I also use a Quantum QX amplified loop as a reference for overall performance. a knife switch makes for quick switches into my Satellit 800. Nothing has quite supassed the Quantum's performance - as yet. We shall see...

John

--- In ferriterodantennaexperimenters@yahoogroups.com<mailto:ferriterodantennaexperimenters%40yahoogroups.com>, Chris Trask <christrask@...> wrote:
>
> >
> > FYI - in case you don't know - the Yahoo Group called
> > Ultralight DX has several people working on FSL antennas
> > with variations on the original theme proving interesting

> > and advancing the science/art.
> >
>
> You might want to avoid that group for now. The moderator is booting people out at even the slightest hint of criticism. Plus that Graham Maynard fellow is sending scathing emails to anyone who does so. He claims that he has rendered all former knowledge of EM and physics obsolete.
>
> It would be better to discuss it in a far less biased forum such as this one here.
>
>
> Chris Trask
> N7ZWY / WDX3HLB
> Senior Member IEEE
> http://www.home.earthlink.net/~christrask/
>

362. Re: Ferrite Sleeve Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-13 02:43:33 UTC
From: lowalacrity
Topic: 339 Message: 362

Raph, I just uploaded some pics of my test set-up previously described. The FS impeder head worked extremely well. At the lower half of the band it 3 s units over all the rest. Its performance evened out at about 1200 khz with the red single rod. What surprised me was the performance of the Black single rod, 3/8" pvc. It matched up almost evenly with the 1/2"X 18" Stormwise red. The red is 660/46 litz. The Black litz is some much smaller I found a large roll of. Tuning seemed just as sharp. Things were too crowded to get good null reads. The air loop is 4" X 8" 23 turn bare copper with variable tapping clips. It holds its own in the BCB at a couple s units lower but works much better in the SW bands. It clearly beat the whip and was quieter. Had to move sme distance from the radio display though.
I'm excited enough to build a bigger one now! I wanted to compare my rods to the Quantum loop but the reception using it was getting "blanked" as it was tuned to a station. Showed the s meter peaking but me thinks it was the regen malfunctioning? More later...

John

--- In ferriterodantennaexperimenters@yahoogroups.com, "Pollock,Raphael E" <rpollock@...> wrote:
>
> Dear John: I am eager to see how your Stormwise antenna heads perform. I have made a 19" and a 27" ferrite bar antenna using the Stormwise 125 mu ferrite bars and 660/46 Litz. The Q is quite sharp, the gain is large, the nulls are deep, and both perform at about the same level overall. I made the 27"er to use with my Eton E1, and have a broadband RF amplifier-an old BAX-1 from 25 years ago-the antenna does not pick up more stations with the additional amplification. My preference is actually to use the 19" antenna inductively coupled to my Satellit 750, so I can manipulate RF gain, volume, Q, and rotation-no altazimuth adjustments possible, however, given the direct coupling. I am not sure how much additional benefit the Ferrite Sleeve antennas will bring to my ability to hear distant MW stations. I am awaiting the results of the experiments being conducted by Kevin and Steve of ultralight fame before trying my hand at a ferrite sleeve antenna. For the money, I am tempted to purchase the Pixel Pro antenna, although $400 is a lot of $ and I really enjoy the experimenting and building myself. I am not a good enough EE to flush out all of the various parameters, so will await the results of the work of the other folks. Meanwhile, it is great fun to stand on the sidelines and watch all the great philosophy, theology, and even science being bantered about on both sides of the Atlantic!!
>
> I eagerly await your results!!
>
> Raph Pollock
>

363. Re: [ferriterodantennaexperimenters] Re: Ferrite Sleeve Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-13 03:26:59 UTC
From: huelbe_garcia@fastimap.com
Topic: 339 Message: 363

Hey John!

Great to see you reporting your experiences! You mentioned you uploaded a few pictures, but I didn't realize where they are :) You mind telling us how to get to the pics?

Thanks!

Huelbe

----- Original message -----
From: "lowalacrity" <jcstumm@...>
To: ferriterodantennaexperimenters@yahoogroups.com
Date: Sun, 13 Mar 2011 02:43:33 -0000
Subject: [ferriterodantennaexperimenters] Re: Ferrite Sleeve Antenna

Raph, I just uploaded some pics of my test set-up previously described. The FS impeder head worked extremely well. At the lower half of the band it 3 s units over all the rest. Its performance evened out at about 1200 khz with the red single rod. What surprised me was the performance of the Black single rod, 3/8" pvc. It matched up almost evenly with the 1/2"X 18" Stormwise red. The red is 660/46 litz. The Black litz is some much smaller I found a large roll of. Tuning seemed just as sharp. Things were too crowded to get good null reads. The air loop is 4" X 8" 23 turn bare copper with variable tapping clips. It holds its own in the BCB at a couple s units lower but works much better in the SW bands. It clearly beat the whip and was quieter. Had to move sme distance from the radio display though. I'm excited enough to build a bigger one now! I wanted to compare my rods to the Quantum loop but the reception using it was getting "blanked" as it was tuned to a station. Showed the s meter peaking but me thinks it was the regen malfunctioning? More later...
John
--- In [1]ferriterodantennaexperimenters@yahoogroups.com, "Pollock,Raphael E" <rpollock@...> wrote:
>
> Dear John: I am eager to see how your Stormwise antenna heads perform. I have made a 19" and a 27" ferrite bar antenna using the Stormwise 125 mu ferrite bars and 660/46 Litz. The Q is quite sharp, the gain is large, the nulls are deep, and both perform at about the same level overall. I made the 27"er to use with my Eton E1, and have a broadband RF amplifier-an old BAX-1 from 25 years ago-the antenna does not pick up more stations with the

additional amplification. My preference is actually to use the 19" antenna inductively coupled to my Satellit 750, so I can manipulate RF gain, volume, Q, and rotation-no altazimuth adjustments possible, however, given the direct coupling. I am not sure how much additional benefit the Ferrite Sleeve antennas will bring to my ability to hear distant MW stations. I am awaiting the results of the experiments being conducted by Kevin and Steve of ultralight fame before trying my hand at a ferrite sleeve antenna. For t he money, I am tempted to purchase the Pixel Pro antenna, although $400 is a lot of $ and I really enjoy the experimenting and building myself. I am not a good enough EE to flush out all of the various parameters, so will await the results of the work of the other folks. Meanwhile, it is great fun to stand on the sidelines and watch all the great philosophy, theology, and even science being bantered about on both sides of the Atlantic!!
>
> I eagerly await your results!!
>
> Raph Pollock
>

References

1. mailto:ferriterodantennaexperimenters%40yahoogroups.com
2. mailto:jcstumm@...?subject=Re%3A%20Ferrite%20Sleeve%20Antenna
3. mailto:ferriterodantennaexperimenters@yahoogroups.com?subject=Re%3A%20Ferrite%20Sleeve%20Antenna
4. http://groups.yahoo.com/group/ferriterodantennaexperimenters/post;_ylc=X3oDMTJwNjg4aDcyBF9TAzk3MzU5NzE0BGdycElkAzE0NTM0ODYyBGdycHNwSWQDMTcwODM5NjM3OQRtc2dJZAMzNjIEc2VjA2Z0cgRzbGsDcnBseQRzdGltZQMxMjk5OTg0MjE3?act=reply&messageNum=362
5. http://groups.yahoo.com/group/ferriterodantennaexperimenters/post;_ylc=X3oDMTJmYTVtMWNvBF9TAzk3MzU5NzE0BGdycElkAzE0NTM0ODYyBGdycHNwSWQDMTcwODM5NjM3OQRzZWMDZnRyBHNsawNudHBjBHN0aW1lAzEyOTk5ODQyMTc-
6. http://groups.yahoo.com/group/ferriterodantennaexperimenters/message/339;_ylc=X3oDMTMzbzVmcm9qBF9TAzk3MzU5NzE0BGdycElkAzE0NTM0ODYyBGdycHNwSWQDMTcwODM5NjM3OQRtc2dJZAMzNjIEc2VjA2Z0cgRzbGsDdnRwYwRzdGltZQMxMjk5OTg0MjE3BHRwY0lkAzMzOQ--
7. http://groups.yahoo.com/group/ferriterodantennaexperimenters/spnew;_ylc=X3oDMTJnbW1rMGU5BF9TAzk3MzU5NzE0BGdycElkAzE0NTM0ODYyBGdycHNwSWQDMTcwODM5NjM3OQRzZWMDdnRsBHNsawN2cGhvdARzdGltZQMxMjk5OTg0MjE3
8. http://groups.yahoo.com/group/ferriterodantennaexperimenters;_ylc=X3oDMTJmbTU1YWxzBF9TAzk3MzU5NzE0BGdycElkAzE0NTM0ODYyBGdycHNwSWQDMTcwODM5NjM3OQRzZWMDdnRsBHNsawN2Z2hwBHN0aW1lAzEyOTk5ODQyMTc-
9. http://groups.yahoo.com/;_ylc=X3oDMTJlN2x2bzFvBF9TAzk3MzU5NzE0BGdycElkAzE0NTM0ODYyBGdycHNwSWQDMTcwODM5NjM3OQRzZWMDZnRyBHNsawNnZnAEc3RpbWUDMTI5OTk4NDIxNw--
10. mailto:ferriterodantennaexperimenters-traditional@yahoogroups.com?subject=Change%20Delivery%20Format:%20Traditional
11. mailto:ferriterodantennaexperimenters-digest@yahoogroups.com?subject=Email%20Delivery:%20Digest
12. mailto:ferriterodantennaexperimenters-unsubscribe@yahoogroups.com?subject=Unsubscribe
13. http://docs.yahoo.com/info/terms/

364. Re: Ferrite Sleeve Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-13 04:57:17 UTC
From: lowalacrity
Topic: 339 Message: 364

Sorry, I should have mentioned they are located in the Impeder rod loops album.

--- In ferriterodantennaexperimenters@yahoogroups.com, "huelbe_garcia@..."
<huelbe_garcia@...> wrote:
>
> Hey John!
>
> Great to see you reporting your experiences! You mentioned you
> uploaded a few pictures, but I didn't realize where they are :)
> You mind telling us how to get to the pics?
>
> Thanks!
>
> Huelbe

365. Re: Ferrite Sleeve Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-14 03:06:54 UTC
From: lowalacrity
Topic: 339 Message: 365

Raph et all,
My latest tests involved the different sizes of litz I have. I rewound the black litz on a 4 rod bundle of 8"x3/8" round rods that fit neatly in a 3/4" PVC (thinwall).They were M400 HH which I'm assuming they are 400mu?. Anyway, That loop showed an incrimental improvement over the 18" stormwise. I then wound the 8" rod bundle with some 660/46 as is the stormwise. It showed a marked improvement over the stormwise that proved it was worth persuing as a rod material. The litz size is secondary. The Lithuanian seller sells this type of material but could be in retangular bars? I'm sure they could be stacked fill any tube size. A couple pic were added to the same album for comparison purposes.

John

--- In ferriterodantennaexperimenters@yahoogroups.com, "Pollock,Raphael E" <rpollock@...> wrote:
>
> Dear John: I am eager to see how your Stormwise antenna heads perform. I have made a 19" and a 27" ferrite bar antenna using the Stormwise 125 mu ferrite bars and 660/46 Litz. The Q is quite sharp, the gain is large, the nulls are deep, and both perform at about the same level overall. I made the 27"er to use with my Eton E1, and have a broadband RF amplifier-an old BAX-1 from 25 years ago-the antenna does not pick up more stations with the additional amplification. My preference is actually to use the 19" antenna inductively coupled to my Satellit 750, so I can manipulate RF gain, volume, Q, and rotation-no altazimuth adjustments possible, however, given the direct coupling. I am not sure how much additional benefit the Ferrite Sleeve antennas will bring to my ability to hear distant MW stations. I am awaiting the results of the experiments being conducted by Kevin and Steve of ultralight fame before trying my hand at a ferrite sleeve antenna. For the money, I am tempted to purchase the Pixel Pro antenna, although $400 is a lot of $ and I really enjoy the experimenting and building myself. I am not a good enough EE to flush out all of the various parameters, so will await the results of the work of the other folks. Meanwhile, it is great fun to stand on the sidelines and watch all the great philosophy, theology, and even science being bantered about on both sides of the Atlantic!!
>
> I eagerly await your results!!
>
> Raph Pollock
>

366. Re: [ferriterodantennaexperimenters] New ferrite loop configuration

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-14 17:59:56 UTC
From: ehydra
Topic: 313 Message: 366

This is the lost link to the russian FSL:
http://www.cqham.ru/ant6.htm

John Popelish schrieb:
> Do you still have this FEMM program to play with? A few
> years ago, I just began the long learning curve involved in
> using one of those. Setting up the initial conditions was
> always harder for me than modeling the core and coil under
> test in that specific environment. Also, mine just did
> steady state (DC), not RF.
>

Any progress made?

I recently rethought about my single-turn copper-foil ferrite rod and
why Q was bad. Initially it was an effort to improve Q by shifting parts
of resonant frequency from L to C by avoiding skin effect. Generally
known that for highest Q the C is considerable cheaper for a given Q.
I guess it is the non-constant μr along the rod. A multi-turn coil
disconnects the parts of the rod for every turn. A single coil will
short the coil partitions.

- Henry

--
ehydra.dyndns.info

367. Re: [ferriterodantennaexperimenters] New ferrite loop configuration

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-14 23:14:48 UTC
From: John Popelish
Topic: 313 Message: 367

On 03/14/2011 01:59 PM, ehydra wrote:
> This is the lost link to the russian FSL:
> http://www.cqham.ru/ant6.htm
>
> John Popelish schrieb:
>> Do you still have this FEMM program to play with? A few
>> years ago, I just began the long learning curve involved in
>> using one of those. Setting up the initial conditions was
>> always harder for me than modeling the core and coil under
>> test in that specific environment. Also, mine just did
>> steady state (DC), not RF.
>>
>
> Any progress made?
>
>
> I recently rethought about my single-turn copper-foil ferrite rod and
> why Q was bad. Initially it was an effort to improve Q by shifting parts
> of resonant frequency from L to C by avoiding skin effect. Generally
> known that for highest Q the C is considerable cheaper for a given Q.
> I guess it is the non-constant Âµr along the rod. A multi-turn coil
> disconnects the parts of the rod for every turn. A single coil will
> short the coil partitions.

I have not spent any time on this program, because I
couldn't tell if it models specific frequency fields (with
eddy current effects and magnetic hysteresis effects) or
only DC (steady state fields).

--
Regards,

John Popelish

368. Re: [ferriterodantennaexperimenters] New ferrite loop configuration

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-15 00:21:19 UTC
From: ehydra
Topic: 313 Message: 368

The GUI is more strange then in LTspice...

There is input for frequency and even output for inductance.

Best to carefully follow the example pdf. Otherwise one is lost.

- Henry

--
ehydra.dyndns.info

John Popelish schrieb:

>> Any progress made?
>>

> I have not spent any time on this program, because I
> couldn't tell if it models specific frequency fields (with
> eddy current effects and magnetic hysteresis effects) or
> only DC (steady state fields).
>

369. Re: [ferriterodantennaexperimenters] New ferrite loop configuration

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-15 02:07:12 UTC
From: John Popelish
Topic: 313 Message: 369

On 03/14/2011 08:21 PM, ehydra wrote:
> The GUI is more strange then in LTspice...
>
> There is input for frequency and even output for inductance.
>
> Best to carefully follow the example pdf. Otherwise one is lost.

I have loaded the program and begun the laborious process of learning how to use it. But it took only a few minutes of reading to discover that the program is accurate only for low frequency modeling (I assume it is intended for line frequency design). I think "low frequency" means that the current through a coil is assumed to be uniform throughout the coil (wavelength is infinite compared to winding length) and no electromagnetic wave effect is taking place throughout the structure. In effect, it is a DC simulator with a few AC effects included.

But that may be enough to quantitatively compare solid rod versus ferrite sleeve flux patterns for ELF through maybe a megahertz range. I have to come up with a sort of Helmholtz coil uniform field generator so that the antenna can be evaluated in receive mode. Whether it is possible to resonate the core coil or load it with an arbitrary impedance is not clear to me,yet.

I'm getting too old to break in new software.

--
Regards,

John Popelish

370. Re: [ferriterodantennaexperimenters] New ferrite loop configuration

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-15 03:10:07 UTC
From: Chris Trask
Topic: 313 Message: 370

```
>
> But that may be enough to quantitatively compare solid rod
> versus ferrite sleeve flux patterns for ELF through maybe a
> megahertz range. I have to come up with a sort of Helmholtz
> coil uniform field generator so that the antenna can be
> evaluated in receive mode. Whether it is possible to
> resonate the core coil or load it with an arbitrary
> impedance is not clear to me,yet.
>
> I'm getting too old to break in new software.
>

Better you than me. I really don't want to take on any new software at
all.

But, when you get a handle on that you might want to take a swing at the
interesting ferrite antenna described in US patent 4,312,003.

Chris Trask
N7ZWY / WDX3HLB
Senior Member IEEE
http://www.home.earthlink.net/~christrask/
```

371. Re: [ferriterodantennaexperimenters] New ferrite loop configuration (Helmholtz coil setup for FSL testing)

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-15 03:15:10 UTC
From: Steve Ratzlaff
Topic: 371 Message: 371

Noticing John's comment about perhaps building a Helmholtz coil setup to test antennas, I've done the same, for testing FSLs. I built a Helmholtz coil setup to attempt to do FSL experimentation under controlled conditions. This was the first time I've tried building a Helmholtz coil setup. I used a cardboard box as the frame; the length of the box ("radius") dictated the diameter of the coils. I figured I wouldn't try to build a FSL more than 20 inches in diameter, and found a box 20 inches long and used that--thus the coil diameters are 40 inches. Not knowing anything about how much coil inductance should be used, in my typical "try it and see if it works" fashion, I found some #12 Romex cable and used that, making 3-turn coils (using the bare copper "ground" wire as one of the conductors. That gave about 30 uH per coil, with about 94 uH with the two coils in series (measured with my aade.com LC meter). I used a piece of the same Romex for the cable connecting the two coils, not using the bare copper conductor, but leaving it in the cable. I've heard the coils work better if fed with a current source (high impedance), but again not knowing what was "high impedance" I used 200 ohms in series with the cable to the BNC connector that the 50 ohm signal generator feeds (a Fluke 6060A).
I used wooden main vertical supports on both ends of the box to hold the top of each coil, and used wooden dowels from coil to coil to hold them in place and at fixed distance from each other all around. It seemed to turn out very well--it's sturdy and stable. (I can provide a picture if desired.)
For the FSL output I made a simple balanced jfet loopamp with two jfets followed by a bipolar, running on a 9 volt battery. A polyvaricon dual-338 pF tuning cap (also found on eBay) was used on the tuned input, with long clip leads for connecting to the FSL coil. I kept the loopamp outside the Helmholtz coil field with just the input leads extending into the field, connected to the FSL coil. I'm using an older Rycom 6030 Selective Level Meter as the linear dBm measuring instrument. It has a LED digital readout with 10 Hz resolution, and -90 dBm sensitivity.
The various FSLs I've built so far have all had LF coils for receiving the 200-530 kHz NDB band.
The whole measuring setup appears to work well. The loopamp apparently has quite a bit of gain, or perhaps the FSL has quite a bit of gain, or probably both have gain. I'm arbitrarily using a general "S6 to S9 units" receiver S unit level output for measuring the FSLs. This seems to work OK, getting several S units above the background noise level with the signal generator output switched off. (approx -65 to -80 dBm on the SLM).
Having already used the FSL for receiving NDBs for the past several weeks, using a Tecsun PL-380 "ultralight radio" (ULR) per the current interest on the yahoo ULR list, I knew how the FSL should act when tuned. The loopamp works the same and I don't notice any difference using the loopamp compared to the FSL and polyvaricon by itself with no loopamp. Thus the loopamp's input impedance appears to be high enough to not be loading the tuned

circuit much more than without the loopamp and just the polyvaricon tuning cap. Either way, FSL Q so far certainly doesn't appear to be very high, perhaps 200, maybe less--I haven't done accurate Q measurements with the SLM yet--but that's what I'm guessing, so most any loopamp with jfets on the input and/or polyvaricon with reputed low Q should be OK for FSL tests. The signal generator output to give approximately -75 dBm reading on the SLM is a quite-low -110 dBm. Not knowing what to expect, I guess this is what is needed--I had thought maybe a higher sig gen output would be needed. But the tests with the 200 ohm series resistor on the Helmholtz input appear to be working OK so I haven't tried changing it to a higher value to see what would happen.
I tested two FSLs today with this setup. The first used forty of the eBay Russian rods, 200 mm x 10 mm, on a Home Depot-purchased plumbing "4 inch styrene coupler", that has 4.5 inch O.D.. A 60 turn closewound coil in the center, of 100/44 Litz, was used.
The second FSL uses the same 4.5" O.D. styrene form, but with some EMI ferrite made for ribbon cable, also acquired on eBay, and 56 turns of 100/44 Litz. These ferrites are sold in pairs to clamp around a ribbon cable; I removed the plastic housing and used each half as a ferrite "bar". These are 2.5" long x 1.1" wide x about 0.2" thick. 13 were needed to go around the form, with a little space left at the end which I equalized between the last two bars. For both FSLs it has already been found that 1/4" spacing between ferrite and coil is about optimum (up to about 1/2" spacing, but not less than 1/4" otherwise FSL output decreases). 1/8" foam wrap can be obtained on eBay, and that's what I use for convenience in setting coil/ferrite spacing.
Here are the results of the tests:
40-rod FSL
450 kHz -74 dBm
350 kHz -74 dBm
250 kHz -74 dBm

EMI bar FSL
450 kHz -75 dBm
350 kHz -74 dBm
250 kHz -77 dBm

As you can see, the two FSLs are quite close even though one is much longer and much heavier (the 40-rod FSL).

For use as an actual receiving antenna, the FSL exhibits the usual reception pattern of a coil with the peak signal along the axis of the coil. However when testing the FSL with the test setup, the coil has to be rotated 90 degrees broadside with the Helmholtz coils for peak output! I don't know why this is. I even made a different test setup, using a 9" diameter 6-turn vertical spiral transmit coil, putting the FSL 24" away. The spiral coil transmits its signal broadside to the FSL. And the FSL had the same result--it had to be broadside (parallel) to the spiral coil for peak output. For some reason it's 90 degrees out from when being used as a receive coil with far-field signals being received.
73,
Steve

----- Original Message -----
From: "John Popelish" <jpopelish@...>
To: <ferriterodantennaexperimenters@yahoogroups.com>
Sent: Monday, March 14, 2011 7:07 PM
Subject: Re: [ferriterodantennaexperimenters] New ferrite loop configuration

> On 03/14/2011 08:21 PM, ehydra wrote:
>> The GUI is more strange then in LTspice...
>>
>> There is input for frequency and even output for inductance.
>>
>> Best to carefully follow the example pdf. Otherwise one is lost.
>
> I have loaded the program and begun the laborious process of
> learning how to use it. But it took only a few minutes of
> reading to discover that the program is accurate only for
> low frequency modeling (I assume it is intended for line
> frequency design). I think "low frequency" means that the
> current through a coil is assumed to be uniform throughout
> the coil (wavelength is infinite compared to winding length)
> and no electromagnetic wave effect is taking place
> throughout the structure. In effect, it is a DC simulator
> with a few AC effects included.
>
> But that may be enough to quantitatively compare solid rod
> versus ferrite sleeve flux patterns for ELF through maybe a
> megahertz range. I have to come up with a sort of Helmholtz
> coil uniform field generator so that the antenna can be
> evaluated in receive mode. Whether it is possible to
> resonate the core coil or load it with an arbitrary
> impedance is not clear to me,yet.
>
> I'm getting too old to break in new software.
>
> --
> Regards,
>
> John Popelish

372. Re: [ferriterodantennaexperimenters] New ferrite loop configuration (Helmholtz coil setup for FSL testing)

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-15 03:27:57 UTC
From: Chris Trask
Topic: 371 Message: 372

```
>
> For use as an actual receiving antenna, the FSL exhibits the usual
reception
> pattern of a coil with the peak signal along the axis of the coil. However
> when testing the FSL with the test setup, the coil has to be rotated 90
> degrees broadside with the Helmholtz coils for peak output! I don't know
why
> this is. I even made a different test setup, using a 9" diameter 6-turn
> vertical spiral transmit coil, putting the FSL 24" away. The spiral coil
> transmits its signal broadside to the FSL. And the FSL had the same
> result--it had to be broadside (parallel) to the spiral coil for peak
> output. For some reason it's 90 degrees out from when being used as a
> receive coil with far-field signals being received.
>

How does the FSL react if you use a vertical whip for the test setup? I
know that the signal level will be far less, but does the FSL pattern remain
the same? I'm wondering about the possibility of inductive coupling, even
at a 24" distance.

Chris Trask
N7ZWY / WDX3HLB
Senior Member IEEE
http://www.home.earthlink.net/~christrask/
```

373. Re: [ferriterodantennaexperimenters] New ferrite loop configuration (Helmholtz coil setup for FSL testing)

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-15 14:35:56 UTC
From: ehydra
Topic: 371 Message: 373

Chris Trask schrieb:
> How does the FSL react if you use a vertical whip for the test setup? I
> know that the signal level will be far less, but does the FSL pattern remain
> the same? I'm wondering about the possibility of inductive coupling, even
> at a 24" distance.
>

Theoretical I don't think it makes much sense, because this is a
near-field setup. In the near-field the E and H components look like
entire catastrophic at any distance (I know that this can be precise
calculated).

For a vertical whip to FSL setup I would promote to reach the far-field!
Or even better a factor of it.

But interesting anyway.

- Henry

--
ehydra.dyndns.info

374. Re: [ferriterodantennaexperimenters] New ferrite loop configuration

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-15 14:41:09 UTC
From: ehydra
Topic: 313 Message: 374

John Popelish schrieb:
> ve loaded the program and begun the laborious process of
> learning how to use it. But it took only a few minutes of
> reading to discover that the program is accurate only for
> low frequency modeling (I assume it is intended for line
> frequency design). I think "low frequency" means that the
> current through a coil is assumed to be uniform throughout
> the coil (wavelength is infinite compared to winding length)
> and no electromagnetic wave effect is taking place
> throughout the structure. In effect, it is a DC simulator
> with a few AC effects included.

I read the forum posts and found different antipodal discussions about it.
Maybe just to ask the programmer.

In the moment I'm overloaded but I may try it later in more freetime.
Months...

Another good is WIPL-D. A full-field solver.

>
> But that may be enough to quantitatively compare solid rod
> versus ferrite sleeve flux patterns for ELF through maybe a
> megahertz range. I have to come up with a sort of Helmholtz
> coil uniform field generator so that the antenna can be
> evaluated in receive mode. Whether it is possible to
> resonate the core coil or load it with an arbitrary
> impedance is not clear to me,yet.

I would suggest broadband resistive. It is known, that the electric
loading of an antenna will change it's radiation pattern. Especially if
the antenna is to short for it's suggested frequency.

The energy resonates in the near-field but decouples in the far-field.

>
> I'm getting too old to break in new software.
>

Yeah. I'm too.

- Henry

--
ehydra.dyndns.info

375. Re: [ferriterodantennaexperimenters] New ferrite loop configuration (Helmholtz coil setup for FSL testing)

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-15 15:01:29 UTC
From: Chris Trask
Topic: 371 Message: 375

```
>
> Chris Trask schrieb:
> > How does the FSL react if you use a vertical whip for
> > the test setup? I know that the signal level will be far
> > less, but does the FSL pattern remain the same? I'm
> > wondering about the possibility of inductive coupling, even
> > at a 24" distance.
> >
>
> Theoretical I don't think it makes much sense, because this
> is a near-field setup. In the near-field the E and H
> components look like entire catastrophic at any distance
> (I know that this can be precise calculated).
>
> For a vertical whip to FSL setup I would promote to reach the
> far-field!
> Or even better a factor of it.
>
> But interesting anyway.
>
```

I was wondering if the 24" distance places the test antenna within the Fresnel zone of the FSL. That might account for the 90-degree ambiguity.

Chris Trask
N7ZWY / WDX3HLB
Senior Member IEEE
http://www.home.earthlink.net/~christrask/

376. Re: FSL near-field response still the same at 37 feet distance from the transmit source

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-15 18:25:16 UTC
From: Steve Ratzlaff
Topic: 376 Message: 376

I didn't try Chris' suggestion of a transmit whip but stayed with the spiral loop connected to the sig gen. I have a max of 37 feet in the house of straight line distance to use, and the FSL was still peaking broadside to the spiral loop at that distance. The FSL had a nice narrow null with coil axis aimed at the spiral--just the opposite of far-field response. It's raining outside today so I can't continue the experiment outdoors for more distance but soon I'll run out of signal generator level. But it would be interesting to find out how far the FSL has to be before it reverts to its normal response pattern. For this last test I was using the ULR inductively coupled to the FSL, as the FSL would normally be used. (With a variable cap on the FSL coil and peaked at 450 kHz, the test frequency, with generator set for 30% AM modulation for use with the AM-only ULR.)
73,
Steve

----- Original Message -----
From: "Chris Trask" <christrask@...>
To: <ferriterodantennaexperimenters@yahoogroups.com>
Sent: Monday, March 14, 2011 8:27 PM
Subject: Re: [ferriterodantennaexperimenters] New ferrite loop configuration (Helmholtz coil setup for FSL testing)

> >
>> For use as an actual receiving antenna, the FSL exhibits the usual
> reception
>> pattern of a coil with the peak signal along the axis of the coil.
>> However
>> when testing the FSL with the test setup, the coil has to be rotated 90
>> degrees broadside with the Helmholtz coils for peak output! I don't know
> why
>> this is. I even made a different test setup, using a 9" diameter 6-turn
>> vertical spiral transmit coil, putting the FSL 24" away. The spiral coil
>> transmits its signal broadside to the FSL. And the FSL had the same
>> result--it had to be broadside (parallel) to the spiral coil for peak
>> output. For some reason it's 90 degrees out from when being used as a
>> receive coil with far-field signals being received.
>>
>
> How does the FSL react if you use a vertical whip for the test setup?
> I
> know that the signal level will be far less, but does the FSL pattern
> remain
> the same? I'm wondering about the possibility of inductive coupling, even
> at a 24" distance.

```
>
>
> Chris Trask
> N7ZWY / WDX3HLB
> Senior Member IEEE
> http://www.home.earthlink.net/~christrask/
>
```

377. Re: [ferriterodantennaexperimenters] Re: FSL near-field response still the same at 37 feet distance from the transmit source

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-15 19:36:20 UTC
From: John Popelish
Topic: 376 Message: 377

On 03/15/2011 02:25 PM, Steve Ratzlaff wrote:
> I didn't try Chris' suggestion of a transmit whip but
> stayed with the spiral loop connected to the sig gen. I
> have a max of 37 feet in the house of straight line
> distance to use, and the FSL was still peaking broadside
> to the spiral loop at that distance. The FSL had a nice
> narrow null with coil axis aimed at the spiral--just the
> opposite of far-field response. It's raining outside
> today so I can't continue the experiment outdoors for
> more distance but soon I'll run out of signal generator
> level. But it would be interesting to find out how far
> the FSL has to be before it reverts to its normal
> response pattern. For this last test I was using the ULR
> inductively coupled to the FSL, as the FSL would normally
> be used. (With a variable cap on the FSL coil and peaked
> at 450 kHz, the test frequency, with generator set for
> 30% AM modulation for use with the AM-only ULR.)

Any far field EM wave passes you with the magnetic flux at right angles to the propagation direction. So the receive coil axis is best when parallel to that transverse to propagation direction.

But when you use a coil to produce a near field approximation of that traveling wave, the largest response should occur when the transmitter coil and receive coil act as windings on a loosely coupled transformer. That is, maximum coupling occurs when the two coils are coaxial (axis of one coil passing through the axis of the other coil).

Or if the transmitting coil has its axis at right angles to the direction of the receive coil, (a much less efficient coupling situation) the maximum receive response should occur when the receive coil axis is parallel to the transmit coil axis.

Is this what your experiments show?
--
Regards,

John Popelish

378. Re: [ferriterodantennaexperimenters] Re: FSL near-field response still the same at 37 feet distance from the transmit source

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-15 19:56:11 UTC
From: Chris Trask
Topic: 376 Message: 378

```
>
> I didn't try Chris' suggestion of a transmit whip but stayed with the
spiral
> loop connected to the sig gen. I have a max of 37 feet in the house of
> straight line distance to use, and the FSL was still peaking broadside to
> the spiral loop at that distance. The FSL had a nice narrow null with coil
> axis aimed at the spiral--just the opposite of far-field response.
>
```

This is very curious. I've been using the illustration of US Patent 4,312.003 as a guide, mentally leaving out the inner rod antenna so that I'm left with an FSL. The only thing that I can think of is that the ambient H-field (radiated by the test antenna) is inducing a flux along both the inside and outside surfaces of the cylinder, which will be independent due to magnetic skin effect. It's entirely possible that these two flux paths are interacting, resulting in the radiation pattern being shifted.

This is just an educated guess at the moment. A way to test this would be to build a second solenoid along the inside surface of the cylinder. The voltage across this inner solenoid should be of the opposite phase of the solenoid of the outer cylinder (right-hand rule), but because of the smaller cross-section it should be a bit lower.

This follows with Paul Birke's earlier suggestion of such a construction. I don't have any ferrite bars or rods to experiment with as of yet, but I would make such a device starting with the PVC coupling, some double-sided carpet tape, the inner solenoid winding, another layer of carpet tape, the ferrite bars/rods, more carpet tape, then the outer solenoid, and finally a layer of packaging tape to hold it all together.

Chris Trask
N7ZWY / WDX3HLB
Senior Member IEEE
http://www.home.earthlink.net/~christrask/

379. Re: [ferriterodantennaexperimenters] Re: FSL near-field response still the same at 37 feet distance from the transmit source

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-15 19:59:24 UTC
From: Chris Trask
Topic: 376 Message: 379

```
>
> Any far field EM wave passes you with the magnetic flux at
> right angles to the propagation direction. So the receive
> coil axis is best when parallel to that transverse to
> propagation direction.
>
> But when you use a coil to produce a near field
> approximation of that traveling wave, the largest response
> should occur when the transmitter coil and receive coil act
> as windings on a loosely coupled transformer. That is,
> maximum coupling occurs when the two coils are coaxial (axis
> of one coil passing through the axis of the other coil).
>
> Or if the transmitting coil has its axis at right angles to
> the direction of the receive coil, (a much less efficient
> coupling situation) the maximum receive response should
> occur when the receive coil axis is parallel to the transmit
> coil axis.
>
> Is this what your experiments show?
>

That's a good point.
```

Chris Trask
N7ZWY / WDX3HLB
Senior Member IEEE
http://www.home.earthlink.net/~christrask/

380. Re: FSL near-field response still the same at 37 feet distance from the transmit source

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-15 20:07:59 UTC
From: Steve Ratzlaff
Topic: 376 Message: 380

Hi John,
Thanks for your comments.
My understanding and experience is a spirally-wound coil when oriented vertically and used as a transmit source is the maximum radiation is broadside (at right angles) to the vertical plane. That is how I'm using it with my spiral loop setup. As such I would say the axis of the coil is then at right angles to the vertical orientation--perhaps that's wrong. Or maybe it's more a question of semantics.
But I don't get maximum pickup if the FSL is in line with the spiral coil's vertical orientation, only at right angles to it. And the FSL coil is parallel to the vertical orientation of the spiral coil for maximum pickup. Or stated another way, the FSL coil axis is parallel to the spiral coil's vertical axis. I can send a picture, if this is unclear! I think it's becoming unclear to me now just what we're trying to describe!
73,
Steve
----- Original Message -----
From: "John Popelish" <jpopelish@...>
To: <ferriterodantennaexperimenters@yahoogroups.com>
Sent: Tuesday, March 15, 2011 12:36 PM
Subject: Re: [ferriterodantennaexperimenters] Re: FSL near-field response still the same at 37 feet distance from the transmit source

Any far field EM wave passes you with the magnetic flux at right angles to the propagation direction. So the receive coil axis is best when parallel to that transverse to propagation direction.

But when you use a coil to produce a near field approximation of that traveling wave, the largest response should occur when the transmitter coil and receive coil act as windings on a loosely coupled transformer. That is, maximum coupling occurs when the two coils are coaxial (axis of one coil passing through the axis of the other coil).

Or if the transmitting coil has its axis at right angles to the direction of the receive coil, (a much less efficient coupling situation) the maximum receive response should occur when the receive coil axis is parallel to the transmit coil axis.

Is this what your experiments show?
--
Regards,

John Popelish

381. Re: picture of spiral loop and FSL orientation uploaded to Photos

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-15 20:37:14 UTC
From: Steve Ratzlaff
Topic: 381 Message: 381

Just so we're all talking about the same thing, I've uploaded a picture of my transmit spiral coil and FSL, shown oriented for maximum FSL pickup, to the Photos section. (This was also true at the 37 foot distance I reported, earlier.)
73,
Steve

382. Re: [ferriterodantennaexperimenters] Re: FSL near-field response still the same at 37 feet distance from the transmit source

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-15 21:44:08 UTC
From: John Popelish
Topic: 376 Message: 382

On 03/15/2011 04:07 PM, Steve Ratzlaff wrote:
(snip)

> I can send a
> picture, if this is unclear! I think it's becoming
> unclear to me now just what we're trying to describe!

A photo or two of your test setup would be very helpful, to
go along with your detailed description.

--
Regards,

John Popelish

383. Re: [ferriterodantennaexperimenters] Re: picture of spiral loop and FSL orientation uploaded to Photos

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-15 21:47:35 UTC
From: John Popelish
Topic: 381 Message: 383

On 03/15/2011 04:37 PM, Steve Ratzlaff wrote:
> Just so we're all talking about the same thing, I've uploaded a picture of
> my transmit spiral coil and FSL, shown oriented for maximum FSL pickup, to
> the Photos section. (This was also true at the 37 foot distance I reported,
> earlier.)

That photo shows a coaxial arrangement that makes the two
coils act like a loosely coupled transformer, with the
maximum response I predicted.

I would probably go with a single turn transmitting coil,
just to keep the phase shift around the coil low for even
better directionality.

--
Regards,

John Popelish

384. Inexpensive source of ferrite not recommended for LF FSL

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-16 01:24:25 UTC
From: Steve Ratzlaff
Topic: 384 Message: 384

For any interested in FSL construction who aren't on the ULR list, the results of my tests of some inexpensive EMI ribbon cable ferrite from Digi-Key that I posted there just now I'm also posting here.
73,
Steve

I received the shipment of ferrite today and made an LF FSL with them and tested it. It is quite a bit inferior to other FSLs I've built--I really can't recommend it, unfortunately. It might work OK for a MW FSL but I haven't built any MW FSLs yet and don't have anything to compare one to.
If you're still interested, a major US distributor, www.digikey.com, carries this ferrite that looked promising, classed as small ferrite used for EMI reduction on ribbon cable. The specific Digi Key part number is P11388--just enter that in the search engine on their home page and it will take you to the item. Each piece is around 35 cents in quantity of 50 or more up to 100 pieces where it's 30.5 cents each. The ferrite is about 1.3" long x 0.39" wide x about 0.25" thick. To use it as a ferrite "bar", you would butt the 0.39" sections together around the form, and wind the coil on the 1.3" section.
I used a standard 4" sytrene coupler as a form, which is obtainable in the plumbing section of stores like Home Depot. It has an outer diameter of 4.5". 37 bars fit around it almost perfectly, with just a small space left over. Two wraps of 1/8" foam were used to give a 1/4" spacing of the coil from the ferrite. Previous tests have shown that 1/4" to 3/8" spacing of coil from ferrite is needed otherwise FSL output drops.
I would a 60-turn closewound coil using 40/44 Litz over the full 1.3" ferrite length, this gave 1118 microhenries. With the recommended dual 338 pF polyvaricon tuning capacitor, this would tune to about 183 kHz at the lowest frequency, which would cover the full NDB band but not all of the LWBC band.
I have a FSL test setup I've developed very recently where I can measure the output of a FSL and compare one FSL to another. Of the several FSLs I've built so far, the original 40-rod one gives the highest output--that's also the one I've been using to do ULR NDB DXing. I firmly believe that the FSL with the highest output is also the most sensitive, and thus the most desirable.
I will show what the 40-rod ferrite FSL measured on the FSL test setup and what the new EMI ribbon cable ferrite FSL gave, then discuss what the numbers mean.

40-rod FSL
450 kHz -74 dBm
350 kHz -74 dBm
250 kHz -74 dBm

EMI FSL
450 kHz -76 dBm
350 kHz -78 dBm
250 kHz -81 dBm

Unless you have worked in electronics it's unlikely you have any idea what the numbers after the frequency mean. "dBm" is an abbreviation for "decibels referred to one milliwatt, measured in a 50 ohm system". More positive numbers (toward zero) indicate a higher output from the FSL (in this case). Thus -74 is a higher output than -76 or -81. Decibels are a logarithmic type notation--the greater the difference the greater the change in power, or in terms of a radio signal, a -3 decibel (dB) difference means the signal is half as strong compared to a signal at 0 dB. Each 3 dB halves that signal power again. A one decibel change is the smallest change that you can hear with your ears, if comparing sound levels. For a radio signal, when it's converted to sound in the radio, that still applies, so the RF signal difference of 1 dB is the smallest change in audio level you would notice if you listened very carefully. Thus, the 40-rod FSL and the EMI FSL are about equal at the high end, 450 kHz, but then the gap steadily widens as the frequency is lowered. You would definitely be missing the weaker signals down at 250 kHz, compared to the 40-rod FSL at 250 kHz.
If the differences between the two antennas were only several dB then I would still recommend the EMI ferrite, but not with the large differences noted as frequency decreases.
As mentioned before, perhaps this ferrite is suitable for MW use in a FSL, but I don't know.
So it appears this fairly inexpensive ferrite is not suitable for use for an LF FSL, unfortunately.
On eBay, searching "ferrite rods" still turns up some Russian sellers with ferrite that has been tested and found to work very well in FSL, both ferrite rods and ferrite bars. If you don't mind paying considerably more, the US distributor Amidon also sells ferrite rods. The -33 type would be the ones to choose to make LF FSL; the -61 type to make MW FSLs, though either type would work for either LF or MW, though -61 might not have enough space to wind a coil with enough inductance to work at LF. Amidon's URL for ferrite rods is https://www.amidoncorp.com/categories/6
Gary DeBock uses Amidon rods for both his MW and LF ULR antennas he builds.

385. Re: [ferriterodantennaexperimenters] Re: FSL near-field response still the same at 37 feet distance from the transmit source

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-15 21:28:33 UTC
From: Paul V Birke PEng
Topic: 376 Message: 385

Dear Chris

does the explanation in this help
http://www.google.com/patents?id=1PAPAAAAEBAJ&printsec=abstract&zoom=4#v=onepage&q&f=false

I think John and I discussed this a few years back and really could not figure
its working.
Maybe you can fare better.
best Paul

From: Chris Trask <christrask@...>
To: ferriterodantennaexperimenters@yahoogroups.com
Sent: Tue, March 15, 2011 3:56:11 PM
Subject: Re: [ferriterodantennaexperimenters] Re: FSL near-field response still
the same at 37 feet distance from the transmit source

>
> I didn't try Chris' suggestion of a transmit whip but stayed with the
spiral
> loop connected to the sig gen. I have a max of 37 feet in the house of
> straight line distance to use, and the FSL was still peaking broadside to
> the spiral loop at that distance. The FSL had a nice narrow null with coil
> axis aimed at the spiral--just the opposite of far-field response.
>

This is very curious. I've been using the illustration of US Patent
4,312.003 as a guide, mentally leaving out the inner rod antenna so that I'm
left with an FSL. The only thing that I can think of is that the ambient
H-field (radiated by the test antenna) is inducing a flux along both the
inside and outside surfaces of the cylinder, which will be independent due
to magnetic skin effect. It's entirely possible that these two flux paths
are interacting, resulting in the radiation pattern being shifted.

This is just an educated guess at the moment. A way to test this would
be to build a second solenoid along the inside surface of the cylinder. The
voltage across this inner solenoid should be of the opposite phase of the
solenoid of the outer cylinder (right-hand rule), but because of the smaller
cross-section it should be a bit lower.

This follows with Paul Birke's earlier suggestion of such a
construction. I don't have any ferrite bars or rods to experiment with as
of yet, but I would make such a device starting with the PVC coupling, some
double-sided carpet tape, the inner solenoid winding, another layer of
carpet tape, the ferrite bars/rods, more carpet tape, then the outer

solenoid, and finally a layer of packaging tape to hold it all together.

Chris Trask
N7ZWY / WDX3HLB
Senior Member IEEE
http://www.home.earthlink.net/~christrask/

386. Re: [ferriterodantennaexperimenters] Re: FSL near-field response still the same at 37 feet distance from the transmit source

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-16 20:30:56 UTC
From: ehydra
Topic: 376 Message: 386

Paul V Birke PEng schrieb:
> Dear Chris
>
> does the explanation in this help
>
http://www.google.com/patents?id=1PAPAAAAEBAJ&printsec=abstract&zoom=4#v=onepage&q&f=false
>
>
> I think John and I discussed this a few years back and really could not figure
> its working.
> Maybe you can fare better.
> best Paul
>

Maybe it works by shifting the magnetic flux lines far outer. So
increasing the efficiency by removing near-field loses.

Would be interesting how the field lines go out of the ferrite and how
fast they change their angle approaching the far-field.

I think WIPL-D ist the right tool for it.

Unfortunately there are no performance numbers in the patent. On the
other side, the shorter the patent text the more I'm convicted that it
works and is helpful ;-)

- Henry

--
ehydra.dyndns.info

387. 1977 IEEE article on Ferrite Rod Antennas uploaded to Files

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-18 03:56:14 UTC
From: Steve Ratzlaff
Topic: 387 Message: 387

I've just created a folder in the Files and uploaded a three page article on Ferrite Rod Antennas I recently received from Mike Tuggle. It should be a good addition to your ferrite rod antenna literature if you don't already have this.
73,
Steve

388. Re: [ferriterodantennaexperimenters] Re: FSL near-field response still the same at 37 feet distance from the transmit source

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-16 21:28:03 UTC
From: Paul V Birke PEng
Topic: 376 Message: 388

yes thanks Henry

very good points you make and I especially like you take on the patent "terseness" as a strong hint the proposed (and obviously now working) system actually works

will be good to hear from John again on this patent and of course Chris

best wishes von Kanada
Paul

From: ehydra <ehydra@...>
To: ferriterodantennaexperimenters@yahoogroups.com
Sent: Wed, March 16, 2011 4:30:56 PM
Subject: Re: [ferriterodantennaexperimenters] Re: FSL near-field response still the same at 37 feet distance from the transmit source

Paul V Birke PEng schrieb:
> Dear Chris
>
> does the explanation in this help
>http://www.google.com/patents?id=1PAPAAAAEBAJ&printsec=abstract&zoom=4#v=onepage&q&f=false
>e
>
>
> I think John and I discussed this a few years back and really could not figure

> its working.
> Maybe you can fare better.
> best Paul
>

Maybe it works by shifting the magnetic flux lines far outer. So increasing the efficiency by removing near-field loses.

Would be interesting how the field lines go out of the ferrite and how fast they change their angle approaching the far-field.

I think WIPL-D ist the right tool for it.

Unfortunately there are no performance numbers in the patent. On the other side, the shorter the patent text the more I'm convicted that it works and is helpful ;-)

- Henry

--
ehydra.dyndns.info

389. Re: [ferriterodantennaexperimenters] Re: FSL near-field response still the same at 37 feet distance from the transmit source

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-19 03:02:32 UTC
From: John Popelish
Topic: 376 Message: 389

On 03/16/2011 05:28 PM, Paul V Birke PEng wrote:
> yes thanks Henry
>
> very good points you make and I especially like you take
> on the patent "terseness" as a strong hint the proposed
> (and obviously now working) system actually works
>
> will be good to hear from John again on this patent and
> of course Chris

My thoughts are very humble. From a near field standpoint, the two coils should produce a combination total field that is simply the superposition of the separate fields of the two individual cores and coils. I don't see any way that such a superposition, that involves so much cancellation makes the near field any more powerful. It should lower the inductance of the inner coil, but I don't think that inductance is a serious limitation in projecting EM waves.

So that brings the possibility that the process of producing EM waves from this altered near field configuration (compared to a simple rod and coil) is some how, almost magically enhanced. If someone can explain how that would work, I am all ears.

--
Regards,

John Popelish

390. Re: [ferriterodantennaexperimenters] Re: FSL near-field response still the same at 37 feet distance from the transmit source

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-19 04:17:24 UTC
From: Chris Trask
Topic: 376 Message: 390

```
>
> > very good points you make and I especially like you take
> > on the patent "terseness" as a strong hint the proposed
> > (and obviously now working) system actually works
> >
> > will be good to hear from John again on this patent and
> > of course Chris
>
> My thoughts are very humble. From a near field standpoint,
> the two coils should produce a combination total field that
> is simply the superposition of the separate fields of the
> two individual cores and coils. I don't see any way that
> such a superposition, that involves so much cancellation
> makes the near field any more powerful. It should lower the
> inductance of the inner coil, but I don't think that
> inductance is a serious limitation in projecting EM waves.
>
> So that brings the possibility that the process of producing
> EM waves from this altered near field configuration
> (compared to a simple rod and coil) is some how, almost
> magically enhanced. If someone can explain how that would
> work, I am all ears.
>
```

I can't think of anything at the moment, and at the same time I don't anticipate anything that would defy our understanding of EM. But, I am curious to see measurements made of the inside/outside solenoid assembly. That could give us more information to work with.

Chris Trask
N7ZWY / WDX3HLB
Senior Member IEEE
http://www.home.earthlink.net/~christrask/

391. Re: FSL with inner and outer coils?

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-19 04:51:19 UTC
From: Steve Ratzlaff
Topic: 391 Message: 391

I admit I don't understand the interest in an inner coil for an FSL. I would think the inner coil would be almost completely shielded from signals. If you can give a specific experiment with details, I might be able to try it with one of my FSLs.
Several weeks ago I tried a very small FSL with inner and outer coils, and tried them in all the configurations I could think of (series, parallel) and there was almost no change in inductance when the inner coil was added compared to the outer coil alone. Maybe a larger FSL would act differently.
And I have a FSL test setup now that I could compare actual signal levels.
But I need some specifics about what is desired for such a FSL.
Steve

----- Original Message -----
From: "Chris Trask" <christrask@...>
To: <ferriterodantennaexperimenters@yahoogroups.com>
Sent: Friday, March 18, 2011 9:17 PM
Subject: Re: [ferriterodantennaexperimenters] Re: FSL near-field response still the same at 37 feet distance from the transmit source

> I can't think of anything at the moment, and at the same time I don't
> anticipate anything that would defy our understanding of EM. But, I am
> curious to see measurements made of the inside/outside solenoid assembly.
> That could give us more information to work with.
>
>
> Chris Trask
> N7ZWY / WDX3HLB
> Senior Member IEEE
> http://www.home.earthlink.net/~christrask/

392. Re: [ferriterodantennaexperimenters] Re: FSL with inner and outer coils?

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-19 13:15:50 UTC
From: Chris Trask
Topic: 391 Message: 392

```
>
> I admit I don't understand the interest in an inner coil
> for an FSL. I would think the inner coil would be almost
> completely shielded from signals. If you can give a
> specific experiment with details, I might be able to try
> it with one of my FSLs.
>
```

For a small one it may very likely, especially one that has a large aspect ratio (length/diameter). As you increase the diameter this effect will diminish and we'll see signal flux along the inner surface of the ferrite cylinder. The idea of the inner coil was to make use of this added flux and thereby increase the "gathering power" of the antenna.

```
>
> Several weeks ago I tried a very small FSL with inner and
> outer coils, and tried them in all the configurations I
> could think of (series, parallel) and there was almost no
> change in inductance when the inner coil was added compared
> to the outer coil alone. Maybe a larger FSL would act
> differently.
>
```

Okay, that tells us what to expect for a small one. Now the question is what happens when we increase the diameter, say up to a foot using the shorter (65mm or 100mm) bars/rods?

```
>
> And I have a FSL test setup now that I could compare actual
> signal levels. But I need some specifics about what is
> desired for such a FSL.
>
```

Along with the potential increased gathering power of the larger two-solenoid design there's also the radiation pattern anomally. Will the larger diameter FSL have the expected radiation pattern or does the 90-degree shift persist?

I'm also interested in the terminal impedance, and I have what's needed here. I just need to free up some $$ to buy a fairly large number of bars.

Chris

393. Re: [ferriterodantennaexperimenters] Re: FSL with inner and outer coils?

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-19 18:03:36 UTC
From: ehydra
Topic: 391 Message: 393

Chris Trask schrieb:
> Along with the potential increased gathering power of the larger
> two-solenoid design there's also the radiation pattern anomally.
> Will the larger diameter FSL have the expected radiation pattern or
> does the 90-degree shift persist?
>
> I'm also interested in the terminal impedance, and I have what's
> needed here. I just need to free up some $$ to buy a fairly large
> number of bars.
>

Why not go for the cheapest you can find? Out of HK, alibaba, ebay or such.

I would be very surprised if any simple structual change for ferrite rod antennas will give us much more signal or S/N.

A very small FSL should be enough for tests.

On the other side, just probing designs out of no clueness is uncomfortable. Try to hit the resonant frequency of an LC-oscillator if you never heard of the thomson formula...

Maybe this double-coil designs removes much reactive resistance and not improves radiation/reception. That would be an improvement at least for transmitting case. Or the inventor made a mistake locating a phaenomeon to the wrong source?
I don't know.

- Henry

--
ehydra.dyndns.info

394. Re: [ferriterodantennaexperimenters] Re: FSL with inner and outer coils?

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-19 18:24:09 UTC
From: Chris Trask
Topic: 391 Message: 394

```
>
> > Along with the potential increased gathering power of the larger
> > two-solenoid design there's also the radiation pattern anomally.
> > Will the larger diameter FSL have the expected radiation pattern or
> > does the 90-degree shift persist?
> >
> > I'm also interested in the terminal impedance, and I have what's
> > needed here. I just need to free up some $$ to buy a fairly large
> > number of bars.
> >
>
> Why not go for the cheapest you can find? Out of HK, alibaba, ebay or
such.
>

I've already earmarked a couple of choices on eBay (40 pcs of
100x20x3mm, or 120 pcs of 62x12x4mm).

>
> I would be very surprised if any simple structual change for ferrite rod
> antennas will give us much more signal or S/N.
>

It won't improve the S/N with the background noise, but it may improve
the S/N due to induced losses when having the wires elevated above the
ferrite as Ben Tongue has shown.

>
> Maybe this double-coil designs removes much reactive resistance and not
> improves radiation/reception. That would be an improvement at least for
> transmitting case. Or the inventor made a mistake locating a phaenomeon
> to the wrong source?
> I don't know.
>

I don't either. I'm mainly interested in seeing if this method can
result in a smaller loop antenna for HF frequencies, but I also want to have
the deeper null of an air-cored loop. It's certainly going to take a bit of
experimentation to see if this will be workable.

Chris Trask
N7ZWY / WDX3HLB
Senior Member IEEE
http://www.home.earthlink.net/~christrask/
```

395. New file uploaded to ferriterodantennaexperimenters

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-19 19:21:26 UTC
From: ferriterodantennaexperimenters@yahoogroup
Topic: 59 Message: 395

Hello,

This email message is a notification to let you know that
a file has been uploaded to the Files area of the ferriterodantennaexperimenters
group.

File : /Pettengill Ferrite Rod Antenna/Pettengill.djvu
Uploaded by : otc_friend <ehydra@...>
Description :

You can access this file at the URL:
http://groups.yahoo.com/group/ferriterodantennaexperimenters/files/Pettengill%20Ferrite%20
Rod%20Antenna/Pettengill.djvu

To learn more about file sharing for your group, please visit:
http://help.yahoo.com/l/us/yahoo/groups/original/members/web/index.html
Regards,

otc_friend <ehydra@...>

396. Re: FSL with inner and outer coils?

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-19 19:30:42 UTC
From: lowalacrity
Topic: 391 Message: 396

Chris, With amplification, It's amasing how small an air core loop it takes to match or out-perform a ferrite core. My 8" diameter does just that, even across the MW band and really excels in the tropical bands.
The nulls are good to as you would expect. My statements concerning the noise reduction were misleadin. I should have considered the time of day it was...No miracle there. Anyway for its relative comact sixe. I like it!
>
> I don't either. I'm mainly interested in seeing if this method can
> result in a smaller loop antenna for HF frequencies, but I also want to have
> the deeper null of an air-cored loop. It's certainly going to take a bit of
> experimentation to see if this will be workable.
>
>
> Chris Trask
> N7ZWY / WDX3HLB
> Senior Member IEEE
> http://www.home.earthlink.net/~christrask/
>

397. FSL with inner and outer coisl tested

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-20 00:11:46 UTC
From: Steve Ratzlaff
Topic: 397 Message: 397

I built a ferrite sleeve loop (FSL) with inner and outer coils and tested it on my FSL test setup today.
An empty plastic peanut butter jar was used as the main form with 15 ferrite bars around it (Russian 100 x 20 x 3 mm bars, purchased on eBay). 20 turns of 5/36 Litz closewound and centered on the bars, spaced 1/4" from the ferrite. Coil outer diameter 4.5".
3 inch styrene coupling used for inner coil form, 3.5 inches coil outer diameter. 20 turns 5/36 Litz closwound and placed on the form so it will be centered in the middle of the bars on the inside. This form positioned inside with 1/8" pieces of foam holding it equidistant from the jar and bars (1/4" spacing between underside of ferrite bars and coil).

Both coils wound in the same direction and inner coil placed inside with this same orientation.
Outer coil left side = 1; right side = 2.
Inner coil left side = 3; right side = 4.

Outer coil 210.9 uH (on aade.com LC meter, used for all). (1-2)

Inner coil in air (not inside ferrite sleeve) 67.6 uH. (3-4)

Inner coil inside ferrite sleeve and taped into position so it can't shift. 3-4 = 82.9 uH.

2 tied to 3, measuring 1 and 4 (series) = 305.8 uH.

1 tied to 3, 2 tied to 4, measuring 1 and 2 (parallel) = 61.5 uH.

2 tied to 4, measuring 1 and 3 = 285.6 uH.

1 tied to 3, measuring 2 and 4 = 284.9 uH.

Test results on FSL test setup (Helmholtz 40" diameter coils, spaced 20" apart, 200 ohms series resistance to 50 ohm Fluke 6060 signal generator; balanced dual jfet loopamp and tuning cap, with bipolar output to Rycom 6030 selective level meter). Signal generator set at -90 dBm output, CW mode):

Each test with loopamp tuning cap peaked for maximum output on the Rycom 6030 at 1630 kHz.

1 and 2 measured (outer coil alone) = -63.0 dBm

3 and 4 measured (inner coil alone) = ~-83 dBm (this is mostly the residual pickup from the test leads)

1 and 4 measured, 2 tied to 3 (series) = -63.3 dBm

1 tied to 3, 2 tied to 4 (parallel), 1 and 2 measured = -72 dBm

2 tied to 4, measuring 1 and 3 = -64 dBm

1 tied to 3, measuring 2 and 4 = -66 dBm

It appears that highest output is for the outer coil alone, next highest with the two coils in series. At no time did the addition of the inner coil provide higher output than the outer coil alone. This appears to show that there is no reason to use an inner coil, that it is being shielded by the ferrite sleeve.

For each test the FSL was rotated to see where maximum pickup was--except for the inner coil by itself, this was always with the coils broadside to the Helmholtz coils. For the inner coil alone, signal pickup appeared to be primarily from the loopamp test leads connecting to the FSL and rotating the FSL didn't change that pickup.

(Note that prior tests with the FSL test setup indicate that the outer coil needs to be 1/4" to 3/8" from the ferrite otherwise output decreases across the entire frequency range (LF-MW, HF not tested).)

73,
Steve

398. Re: [ferriterodantennaexperimenters] FSL with inner and outer coisl tested

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-20 00:45:33 UTC
From: ehydra
Topic: 397 Message: 398

Hi Steve -

Was it for the 4312003 patent? I cannot see the mentioned phase shifter.
Have you added it?

And it is probably for underground comm.

regards -
Henry

--
ehydra.dyndns.info

Steve Ratzlaff schrieb:

> It appears that highest output is for the outer coil alone, next highest
> with the two coils in series. At no time did the addition of the inner coil
> provide higher output than the outer coil alone. This appears to show that
> there is no reason to use an inner coil, that it is being shielded by the
> ferrite sleeve.
>
> For each test the FSL was rotated to see where maximum pickup was--except
> for the inner coil by itself, this was always with the coils broadside to
> the Helmholtz coils. For the inner coil alone, signal pickup appeared to be
> primarily from the loopamp test leads connecting to the FSL and rotating the
> FSL didn't change that pickup.
>
> (Note that prior tests with the FSL test setup indicate that the outer coil
> needs to be 1/4" to 3/8" from the ferrite otherwise output decreases across
> the entire frequency range (LF-MW, HF not tested).)

399. Re: [ferriterodantennaexperimenters] FSL with inner and outer coisl tested

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-20 01:09:09 UTC
From: Steve Ratzlaff
Topic: 397 Message: 399

Hi Henry,
Are you asking me something? What are you talking about? I don't understand your questions. Perhaps you meant your post to go to someone else.
73,
Steve

----- Original Message -----
From: "ehydra" <ehydra@...>
To: <ferriterodantennaexperimenters@yahoogroups.com>
Sent: Saturday, March 19, 2011 5:45 PM
Subject: Re: [ferriterodantennaexperimenters] FSL with inner and outer coisl tested

> Hi Steve -
>
> Was it for the 4312003 patent? I cannot see the mentioned phase shifter.
> Have you added it?
>
> And it is probably for underground comm.
>
>
> regards -
> Henry
>
>
> --
> ehydra.dyndns.info
>
>

400. Re: [ferriterodantennaexperimenters] FSL with inner and outer coisl tested

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-20 02:15:33 UTC
From: ehydra
Topic: 397 Message: 400

About this:
http://www.google.com/patents?id=1PAPAAAAEBAJ&printsec=abstract&zoom=4#v=onepage&q&f=false

I thought you tested just this?

- Henry

--
ehydra.dyndns.info

Steve Ratzlaff schrieb:
> Hi Henry,
> Are you asking me something? What are you talking about? I don't understand
> your questions. Perhaps you meant your post to go to someone else.
> 73,
> Steve
>
> ----- Original Message -----
> From: "ehydra" <ehydra@...>
> To: <ferriterodantennaexperimenters@yahoogroups.com>
> Sent: Saturday, March 19, 2011 5:45 PM
> Subject: Re: [ferriterodantennaexperimenters] FSL with inner and outer coisl
> tested
>
>
>> Hi Steve -
>>
>> Was it for the 4312003 patent? I cannot see the mentioned phase shifter.
>> Have you added it?
>>
>> And it is probably for underground comm.

401. Re: [ferriterodantennaexperimenters] FSL with inner and outer coisl tested

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-20 02:36:45 UTC
From: Steve Ratzlaff
Topic: 397 Message: 401

Nope, I haven't looked at that patent and don't know what it's about.
Steve

----- Original Message -----
From: "ehydra" <ehydra@...>
To: <ferriterodantennaexperimenters@yahoogroups.com>
Sent: Saturday, March 19, 2011 7:15 PM
Subject: Re: [ferriterodantennaexperimenters] FSL with inner and outer coisl
tested

> About this:
>
http://www.google.com/patents?id=1PAPAAAAEBAJ&printsec=abstract&zoom=4#v=onepage&q&f=false
>
> I thought you tested just this?
>
>
> - Henry
>
> --
> ehydra.dyndns.info
>
>
> Steve Ratzlaff schrieb:
>> Hi Henry,
>> Are you asking me something? What are you talking about? I don't
>> understand
>> your questions. Perhaps you meant your post to go to someone else.
>> 73,
>> Steve
>>
>> ----- Original Message -----
>> From: "ehydra" <ehydra@...>
>> To: <ferriterodantennaexperimenters@yahoogroups.com>
>> Sent: Saturday, March 19, 2011 5:45 PM
>> Subject: Re: [ferriterodantennaexperimenters] FSL with inner and outer
>> coisl
>> tested
>>
>>
>>> Hi Steve -
>>>
>>> Was it for the 4312003 patent? I cannot see the mentioned phase shifter.
>>> Have you added it?
>>>

>>> And it is probably for underground comm.

402. Re: [ferriterodantennaexperimenters] FSL with inner and outer coisl tested

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-20 14:16:32 UTC
From: Chris Trask
Topic: 397 Message: 402

Steve,

<<SNIP>>

>
> It appears that highest output is for the outer coil alone,
> next highest with the two coils in series. At no time did
> the addition of the inner coil provide higher output than
> the outer coil alone. This appears to show that there is
> no reason to use an inner coil, that it is being shielded
> by the ferrite sleeve.
>

<<SNIP>>

That's a fairly thorough test. I would have liked to also seen the phase difference in the signal volatage between the two coils, but since there's little advantage to the two-solenoid approach it's not really needed.

With that out of the way, does anyone have any further thoughts as to the 90-degree anomally in the radiation pattern? I think that the earlier suggestion that it was mutual coupling between the FSL and the test loop may be the culprit, or at least it's the most reasonable.

An additional question is how does the aspect ratio (length/diameter) affect the radiation pattern? Does a larger diameter and shorter length result in a "better" pattern, meaning that the null is better defined?

Chris Trask
N7ZWY / WDX3HLB
Senior Member IEEE
http://www.home.earthlink.net/~christrask/

403. Re: [ferriterodantennaexperimenters] FSL with inner and outer coisl tested

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-20 17:57:18 UTC
From: ehydra
Topic: 397 Message: 403

Chris Trask schrieb:
> An additional question is how does the aspect ratio (length/diameter)
> affect the radiation pattern? Does a larger diameter and shorter
> length result in a "better" pattern, meaning that the null is better
> defined?

It looks so but I cannot quantify it. Some of the ADF rods are short.
Optimum coil and form depends on frequency, Q, sensitivity optimization.

Maybe it is because a lengthy coil will work more like a transmission
mode transformer? So a wandering phase along the rod?

- Henry

--
ehydra.dyndns.info

404. Re: [ferriterodantennaexperimenters] FSL with inner and outer coisl tested

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-20 00:41:28 UTC
From: Paul V Birke PEng
Topic: 397 Message: 404

Dear Steve

thanks for doing this set of experiments

is it your conclusion that I should remove the double coil ppt I put in the files section?

as my conjecture would be that the dual coil would be better and it clearly is not

again thanks for your strong efforts here advancing the knowledge of the FSA - Faraday would be proud !!

best wishes
Paul in Guelph ON

From: Steve Ratzlaff <steveratz@...>
To: ferriterodantennaexperimenters@yahoogroups.com
Sent: Sat, March 19, 2011 8:11:46 PM
Subject: [ferriterodantennaexperimenters] FSL with inner and outer coisl tested

I built a ferrite sleeve loop (FSL) with inner and outer coils and tested it on my FSL test setup today.
An empty plastic peanut butter jar was used as the main form with 15 ferrite bars around it (Russian 100 x 20 x 3 mm bars, purchased on eBay). 20 turns of 5/36 Litz closewound and centered on the bars, spaced 1/4" from the ferrite. Coil outer diameter 4.5".
3 inch styrene coupling used for inner coil form, 3.5 inches coil outer diameter. 20 turns 5/36 Litz closwound and placed on the form so it will be centered in the middle of the bars on the inside. This form positioned inside with 1/8" pieces of foam holding it equidistant from the jar and bars (1/4" spacing between underside of ferrite bars and coil).

Both coils wound in the same direction and inner coil placed inside with this same orientation.
Outer coil left side = 1; right side = 2.
Inner coil left side = 3; right side = 4.

Outer coil 210.9 uH (on aade.com LC meter, used for all). (1-2)

Inner coil in air (not inside ferrite sleeve) 67.6 uH. (3-4)

Inner coil inside ferrite sleeve and taped into position so it can't shift.
3-4 = 82.9 uH.

2 tied to 3, measuring 1 and 4 (series) = 305.8 uH.

1 tied to 3, 2 tied to 4, measuring 1 and 2 (parallel) = 61.5 uH.

2 tied to 4, measuring 1 and 3 = 285.6 uH.

1 tied to 3, measuring 2 and 4 = 284.9 uH.

Test results on FSL test setup (Helmholtz 40" diameter coils, spaced 20" apart, 200 ohms series resistance to 50 ohm Fluke 6060 signal generator; balanced dual jfet loopamp and tuning cap, with bipolar output to Rycom 6030 selective level meter). Signal generator set at -90 dBm output, CW mode):

Each test with loopamp tuning cap peaked for maximum output on the Rycom 6030 at 1630 kHz.

1 and 2 measured (outer coil alone) = -63.0 dBm

3 and 4 measured (inner coil alone) = ~-83 dBm (this is mostly the residual pickup from the test leads)

1 and 4 measured, 2 tied to 3 (series) = -63.3 dBm

1 tied to 3, 2 tied to 4 (parallel), 1 and 2 measured = -72 dBm

2 tied to 4, measuring 1 and 3 = -64 dBm

1 tied to 3, measuring 2 and 4 = -66 dBm

It appears that highest output is for the outer coil alone, next highest with the two coils in series. At no time did the addition of the inner coil provide higher output than the outer coil alone. This appears to show that there is no reason to use an inner coil, that it is being shielded by the ferrite sleeve.

For each test the FSL was rotated to see where maximum pickup was--except for the inner coil by itself, this was always with the coils broadside to the Helmholtz coils. For the inner coil alone, signal pickup appeared to be primarily from the loopamp test leads connecting to the FSL and rotating the FSL didn't change that pickup.

(Note that prior tests with the FSL test setup indicate that the outer coil needs to be 1/4" to 3/8" from the ferrite otherwise output decreases across the entire frequency range (LF-MW, HF not tested).)

73,
Steve

405. Re: [ferriterodantennaexperimenters] FSL with inner and outer coisl tested

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-24 06:06:35 UTC
From: Steve Ratzlaff
Topic: 397 Message: 405

Hi Paul,
My own personal conclusion from my tests is the inner coil does next to nothing and isn't needed. I can't tell you yea or nay about if your powerpoint drawing should be deleted, that's for you to decide, based on your own conclusions.

I am continuing to build FSLs and test and compare them using my Helmholtz coil FSL test setup. I have found that it is important to use 1/4" to 3/8" spacing of the coil from the ferrite, otherwise output drops across the whole frequency range compared to with less than 1/4-3/8" spacing. More spacing over 1/4" isn't needed and doesn't increase output but it doesn't hurt output. I tested spacings with the coil wound directly on the ferrite (no spacing), increasing in 1/8" steps to 3/8" spacing.
Preliminary results indicate that high-count Litz also improves output, even at LF where such big Litz wire strand diameter (#46 gauge) isn't supposed to be anywhere close to optimum. This was using 660/46 Litz. I need to do more tests with other count Litz wound for the same number of turns, with the FSL test setup, but the one test I did showed a noticeable improvement over the 40/44 Litz I had been using. Of course the big Litz is quite a bit more expensive, and the ferrite itself isn't inexpensive, so an optimum FSL design may turn out to be quite a drain on the pocketbook.
I have come to believe what the FSL test setup says--if it says an FSL has higher output (is more sensitive) than another one, then I also find that when I actually use the FSL with the Ultralight Radio as an antenna booster it results in weaker signals heard.
73,
Steve
----- Original Message -----
From: Paul V Birke PEng
To: ferriterodantennaexperimenters@yahoogroups.com
Sent: Saturday, March 19, 2011 5:41 PM
Subject: Re: [ferriterodantennaexperimenters] FSL with inner and outer coisl tested

Dear Steve

thanks for doing this set of experiments

is it your conclusion that I should remove the double coil ppt I put in the files section?

as my conjecture would be that the dual coil would be better and it clearly is not

again thanks for your strong efforts here advancing the knowledge of the FSA
- Faraday would be proud !!

best wishes
Paul in Guelph ON

From: Steve Ratzlaff <steveratz@...>
To: ferriterodantennaexperimenters@yahoogroups.com
Sent: Sat, March 19, 2011 8:11:46 PM

Subject: [ferriterodantennaexperimenters] FSL with inner and outer coisl tested

406. Recommendation on effective ferrite antena for NDB and MF

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-24 07:29:15 UTC
From: huelbe_garcia@fastimap.com
Topic: 406 Message: 406

Hello there!

I've been following this group for some time and I'm glad to see it vivid with the FSL discussion. Thanks for all of you guys (Steve, Chris, Paul, Ehydra and many others I'm not remembering top-of-head)!

If possible, I'd like to invite you to share with this group your favorite construction recommendations for building an effective (meaning: provides decent performance, it is portable, reasonable cost), passive ferrite rod antena for MF and NDB bands.

So, what kind of litz wire you prefer? How many ferrite rods? Should one group the rods in series (to have a very high length:diameter ratio), in paralel (so to have a thicker rod) or a combination? A single solenoid or something like CCrane twin coil? Perhaps contra-wound?

Thanks a lot in advance for all thougths shared here!

Huelbe

407. Re: FSL with inner and outer coisl tested

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-24 11:00:33 UTC
From: aircheckclover
Topic: 397 Message: 407

Hi Steve;

Continuing to follow along here. Couple questions based on your last observations: You said "and the ferrite itself isn't inexpensive". Do i recall a few weeks back you or someone trying the relatively inexpensive Russian-eBay flat ferrite bars with same/similar results to ferrite rods? While available, are the flat bars a relatively inexpensive solution? Along these lines, do you (so far) have any conclusions about the amount of surface area of the ferrite playing a role in FSL weak-signal boost? IE, would 20 small diameter ferrites work better than 10 larger diameter ferrites? Do you have any conclusion so far about the role of ferrite permeability? Finally - your last comment seems counter-intuitive. Am I reading it correctly?
"I have come to believe what the FSL test setup says--if it says an FSL has higher output (is more sensitive) than another one, then I also find that when I actually use the FSL with the Ultralight Radio as an antenna booster it results in weaker signals heard." I can't quite wrap my arms around that one! Regards, Mark

408. Re: FSL with inner and outer coils tested

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-24 14:47:21 UTC
From: Steve Ratzlaff
Topic: 408 Message: 408

Hi Mark,
Ferrite bars that are thin appear to work well for a FSL. Ferrite bars appear to give more bang for the buck than ferrite rods, given a choice between them. A larger diameter FSL equals a more sensitive FSL. The FSL that gave the highest output on my FSL test setup was also the most sensitive antenna when used with the Ultralight Radio.
I haven't done any tests yet comparing a longer narrower diameter FSL to a shorter wider diameter FSL.
73,
Steve

----- Original Message -----
From: "aircheckl over" <mdh@...>
To: <ferriterodantennaexperimenters@yahoogroups.com>
Sent: Thursday, March 24, 2011 4:00 AM
Subject: [ferriterodantennaexperimenters] Re: FSL with inner and outer coisl tested

> Hi Steve;
>
> Continuing to follow along here. Couple questions based on your last
> observations: You said "and the ferrite itself isn't inexpensive". Do i
> recall a few weeks back you or someone trying the relatively inexpensive
> Russian-eBay flat ferrite bars with same/similar results to ferrite rods?
> While available, are the flat bars a relatively inexpensive solution?
> Along these lines, do you (so far) have any conclusions about the amount
> of surface area of the ferrite playing a role in FSL weak-signal boost?
> IE, would 20 small diameter ferrites work better than 10 larger diameter
> ferrites? Do you have any conclusion so far about the role of ferrite
> permeability? Finally - your last comment seems counter-intuitive. Am I
> reading it correctly?
> "I have come to believe what the FSL test setup says--if it says an FSL
> has higher output (is more sensitive) than another one, then I also find
> that when I actually use the FSL with the Ultralight Radio as an antenna
> booster it results in weaker signals heard." I can't quite wrap my arms
> around that one! Regards, Mark

409. Re: [ferriterodantennaexperimenters] Re: FSL with inner and outer coils tested

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-24 14:59:17 UTC
From: Chris Trask
Topic: 408 Message: 409

```
>
> Ferrite bars that are thin appear to work well for a FSL.
> Ferrite bars appear to give more bang for the buck than
> ferrite rods, given a choice between them. A larger diameter
> FSL equals a more sensitive FSL. The FSL that gave the
> highest output on my FSL test setup was also the most
> sensitive antenna when used with the Ultralight Radio. I
> haven't done any tests yet comparing a longer narrower
> diameter FSL to a shorter wider diameter FSL.
>
```

I'm not surprised that the bars give better performance, since they will provide a more continuous surface than the rods would.

Addressing the wire to ring spacing: Do you suppose that you could use the inner conductor and insulation of RG-58 or similar coaxial cable?
That would make construction a bit easier.

Chris Trask
N7ZWY / WDX3HLB
Senior Member IEEE
http://www.home.earthlink.net/~christrask/

410. More FSL tests--trying various sizes of Litz wire

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-25 21:12:19 UTC
From: Steve Ratzlaff
Topic: 410 Message: 410

This is mostly about comparing sizes of Litz wire on a ferrite sleeve antenna (FSL), but #22 stranded hookup wire was included as well. I made a smaller FSL in order to minimize how much Litz I had to "waste" on the tests (about 24 feet). I used a "3 inch styrene coupler" found in the plumbing section of stores like Home Depot. Russian 400 mu 100 x 20 x 3 mm bars were used; 14 bars on the form. 1/4 inch spacing between ferrite and coil was used. Final coil O.D. 4.3 inches. The FSL test setup (Helmholtz coils and Rycom 6030 SLM) was used.
20 turns were used for the FSL coil.

660/46 Litz, close wound in center, 147 uH
570 kHz 1070 kHz 1630 kHz
-57 dBm -56 dBm -59 dBm

175/46 Litz, close wound in center, 180 uH
570 kHz 1070 kHz 1630 kHz
-59.5 dBm -58 dBm -60.5 dBm

100/44 Litz, close wound in center, 178 uH
570 kHz 1070 kHz 1630 kHz
-59.5 dBm -58 dBm -60.3 dBm

40/44 Litz, close wound in center, 193 uH
570 kHz 1070 kHz 1630 kHz
-63 dBm -59.5 dBm -61 dBm

#22 stranded hookup wire, spaced over the 4" ferrite width
645 kHz (min tune) 1070 kHz 1630 kHz
-65 dBm -62.5 dBm -63 dBm

The results appear to show that the big Litz (expensive) gives the highest output (most sensitive antenna). The 175/46 and 100/44 are equal. The #22 hookup wire comes in a distant last place especially when compared with the big Litz.
The small coil used didn't have enough inductance to get down to LF, but my tests with 1200-1400 uH LF coils show the same thing--the big 660/46 Litz is still superior at LF, despite the #46 strand size not supposedly being anywhere close to optimum at LF. But the next two Litz sizes are only a little down in output from the big Litz, so especially where cost is a factor, they would do a decent job for a FSL.

73,
Steve

411. Re: More FSL tests--trying various sizes of Litz wire (addendum)

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-25 21:46:39 UTC
From: steveratz
Topic: 410 Message: 411

I forgot to include the #22 wire spaced-coil inductance--107 uH.
Steve

--- In ferriterodantennaexperimenters@yahoogroups.com, "Steve Ratzlaff" <steveratz@...>
wrote:
>
> #22 stranded hookup wire, spaced over the 4" ferrite width
> 645 kHz (min tune) 1070 kHz 1630 kHz
> -65 dBm -62.5 dBm -63 dBm
>

412. Re: FSL with inner and outer coils tested

Yahoo group: ferriterodantennaexperimenters
Date: 2011-03-24 17:04:26 UTC
From: pvbirke
Topic: 408 Message: 412

Dear Chris

would not the solid inner conductor mitigate against use
someone reported the reduced signal with solid conductor

any available coax with stranded inner wire as your basic idea herein is quite KOOL

best wishes
Paul

--- In ferriterodantennaexperimenters@yahoogroups.com, Chris Trask <christrask@...> wrote:
>
> >
> > Ferrite bars that are thin appear to work well for a FSL.
> > Ferrite bars appear to give more bang for the buck than
> > ferrite rods, given a choice between them. A larger diameter
> > FSL equals a more sensitive FSL. The FSL that gave the
> > highest output on my FSL test setup was also the most
> > sensitive antenna when used with the Ultralight Radio. I
> > haven't done any tests yet comparing a longer narrower
> > diameter FSL to a shorter wider diameter FSL.
> >
>
> I'm not surprised that the bars give better performance, since they will provide a more
continuous surface than the rods would.
>
> Addressing the wire to ring spacing: Do you suppose that you could use the inner
conductor and insulation of RG-58 or similar coaxial cable?
> That would make construction a bit easier.
>
>
> Chris Trask
> N7ZWY / WDX3HLB
> Senior Member IEEE
> http://www.home.earthlink.net/~christrask/
>

413. Re: FSL with inner and outer coisl tested

Yahoo group: ferriterodantennaexperimenters
Date: 2011-04-05 22:45:14 UTC
From: bty49514
Topic: 397 Message: 413

The cost of a serious bunch of ferrites is a disincentive for some of us. A comparative summary of findings thus far would be most helpful:-

1. max/min number of rods/bars and array diameter for effective FSL;
2. measured quality of rods by source. Some may be inferior...
3. Litze (for some not an option), mini-coax or other wire.
4. Best sub-optimal compromise.

414. Re: FSL recommendations

Yahoo group: ferriterodantennaexperimenters
Date: 2011-04-06 04:18:24 UTC
From: Steve Ratzlaff
Topic: 414 Message: 414

Hi Michael,
I don't know if you're on the ULR list; that's where most of the FSL stuff has been posted.
But I have recently built a small traditional air core tuned loop and tested it on my FSL test setup--it works just as well and even better than a FSL due to the 14 inch diameter form I used. You didn't say if you wanted LF or MW loop, but the principle is the same--a traditional small tuned air loop would work as well or better than a FSL. The air loop needs to be somewhat larger though; that might be a drawback. And Litz needs to be used if you want comparable performance to a Litz FSL. And my tests have shown that non-Litz is far inferior to Litz. I don't recommend non-Litz at all, based on my tests. It will work but nowhere close to the output that Litz will give. I'm sure at least one of the two USA eBay Litz sellers would ship to UK (as it appears you are from, on your email address). It wouldn't weigh very much, for postage.
And if you're in the UK, then why not buy the relatively inexpensive UK distributor RapidOnline ferrite that Graham Maynard used, if you're planning on a FSL. Otherwise the 100 x 20 x 3 mm bars from the Russian eBay seller are the best buy. Only thin ferrite is needed; rods just weigh more and the extra thickness doesn't help. The RapidOnline rods are 125 mu; all the Russian ferrite is 400 mu. That can make a slight difference if you want a MW FSL as more turns would be used for the 125 mu--an advantage over fewer turns for 400 mu ferrite.
For Litz, use the largest Litz you can afford. I tested 660/46 which gave the highest output; 175/46 and 100/44 were about equal and a dB or two below the big Litz. They are of course much cheaper than the big Litz. Those results held for both the air core and the FSL.
I recommend a minimum size of 8 inch coil diameter for a sensitive FSL; 12-14 inch minimum diameter for an air core loop, especially for the LF version. You need all the sensitivity you can get the lower you go in frequency.
73,
Steve

----- Original Message -----
From: "bty49514" <michael.setaazul@...>
To: <ferriterodantennaexperimenters@yahoogroups.com>
Sent: Tuesday, April 05, 2011 3:45 PM
Subject: [ferriterodantennaexperimenters] Re: FSL with inner and outer coisl tested

> The cost of a serious bunch of ferrites is a disincentive for some of us.
> A comparative summary of findings thus far would be most helpful:-
>
> 1. max/min number of rods/bars and array diameter for effective FSL;

> 2. measured quality of rods by source. Some may be inferior...
> 3. Litze (for some not an option), mini-coax or other wire.
> 4. Best sub-optimal compromise.

415. RE: [ferriterodantennaexperimenters] Re: FSL recommendations

Yahoo group: ferriterodantennaexperimenters
Date: 2011-04-06 13:25:52 UTC
From: Pollock,Raphael E
Topic: 414 Message: 415

Dear Steve: Thank you for all the effort and expense of performing the careful experimentation concerning the FSL-studies that most of the rest of us either do not have the time, money, or-most pertinently-working knowledge of electronics to conduct. It is interesting that your conclusion seems to be that there is not much advantage in the FSL versus air core loop other than smaller size. And as a negative is the cost of the ferrites (mitigated partially by using Ebay Russian product), the more complex PVC support system needed (perhaps also a relative issue), and the fragility/durability/reparability of the FSL versus the air core loop. The Litz issue mirrors my own experience with Litz wound ferrite bar antennas-the more strands the more conductivity, and 660/46 Litz versus 28 AWG multi-strand pick up wire windings for a primary coil is the difference between day and night-the crystal radio guys certainly have that right! The Litz that I have used was purchased from Dave Schmarder; do you have any experience with the Ebay 660/46 Litz product-looks like it comes from Mainland China. I think I'll stick with my ferrite bar set ups for now; again, many thanks!

Raph Pollock

From: ferriterodantennaexperimenters@yahoogroups.com
[mailto:ferriterodantennaexperimenters@yahoogroups.com] On Behalf Of Steve Ratzlaff
Sent: Tuesday, April 05, 2011 11:18 PM
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: [ferriterodantennaexperimenters] Re: FSL recommendations

Hi Michael,
I don't know if you're on the ULR list; that's where most of the FSL stuff has been posted.
But I have recently built a small traditional air core tuned loop and tested it on my FSL test setup--it works just as well and even better than a FSL due to the 14 inch diameter form I used. You didn't say if you wanted LF or MW loop, but the principle is the same--a traditional small tuned air loop would work as well or better than a FSL. The air loop needs to be somewhat larger though; that might be a drawback. And Litz needs to be used if you want comparable performance to a Litz FSL. And my tests have shown that non-Litz is far inferior to Litz. I don't recommend non-Litz at all, based on my tests. It will work but nowhere close to the output that Litz will give. I'm sure at least one of the two USA eBay Litz sellers would ship to UK (as it appears you are from, on your email address). It wouldn't weigh very much, for postage.
And if you're in the UK, then why not buy the relatively inexpensive UK distributor RapidOnline ferrite that Graham Maynard used, if you're planning on a FSL. Otherwise the 100 x 20 x 3 mm bars from the Russian eBay seller are the best buy. Only thin ferrite is needed; rods just weigh more and the extra thickness doesn't help. The RapidOnline rods are 125 mu; all the Russian ferrite is 400 mu. That can make a slight difference if you want a MW FSL as more turns would be used for the 125 mu--an advantage over fewer turns for 400 mu ferrite.

For Litz, use the largest Litz you can afford. I tested 660/46 which gave the highest output; 175/46 and 100/44 were about equal and a dB or two below the big Litz. They are of course much cheaper than the big Litz. Those results held for both the air core and the FSL.
I recommend a minimum size of 8 inch coil diameter for a sensitive FSL; 12-14 inch minimum diameter for an air core loop, especially for the LF version. You need all the sensitivity you can get the lower you go in frequency.
73,
Steve

----- Original Message -----
From: "bty49514" <michael.setaazul@...<mailto:michael.setaazul%40btopenworld.com>>
To: <ferriterodantennaexperimenters@yahoogroups.com<mailto:ferriterodantennaexperimenters%40yahoogroups.com>>
Sent: Tuesday, April 05, 2011 3:45 PM
Subject: [ferriterodantennaexperimenters] Re: FSL with inner and outer coisl tested

> The cost of a serious bunch of ferrites is a disincentive for some of us.
> A comparative summary of findings thus far would be most helpful:-
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> 1. max/min number of rods/bars and array diameter for effective FSL;
> 2. measured quality of rods by source. Some may be inferior...
> 3. Litze (for some not an option), mini-coax or other wire.
> 4. Best sub-optimal compromise.

416. Re: [ferriterodantennaexperimenters] Re: FSL recommendations

Yahoo group: ferriterodantennaexperimenters
Date: 2011-04-16 19:52:03 UTC
From: Steve Ratzlaff
Topic: 414 Message: 416

Hi Raph,
Yes, I have tested the 660/46 Xizi Chinese Litz (from eBay seller Ming) with the standard solenoid coil on the styrene 4" coupler (from Home Depot and other places) and have found it has even higher Q at the top end of the BCB than the Kerrigan-Lewis 660/46 Litz I have. So this is very good Litz. It took Xizi several tries to learn how to do Litz. Ming was responsible for interfacing with them (he's Chinese though he's lived in the USA for 35 years) with the Litz and getting it into the USA market. Note that the older Litz used brightly colored silk insulation and is very inferior to the latest no-color insulation Litz. Do not buy any Litz that has colored insulation, if you care about coil Q (and why would you use Litz anyway if Q wasn't the main factor)! (Several other Litz sellers have various sizes of Litz in the colored variety.)
As I'm sure you know, Dave Schmarder isn't selling Litz any longer, so apart from ordering Litz directly from the USA manufacturers (and waiting for it to be manufactured just for your custom order, and having to buy an approximate 2 pound minimum amount), buying the Chinese Litz from the various eBay sellers is the only other option currently.
I've tested several other sizes of Chinese Litz on the HP 4342A Q meter and sytrene solenoid and it all has given good Q results, commensurate with the strand count--highest strand count having highest Q.
73,
Steve
----- Original Message -----
From: Pollock,Raphael E
To: 'ferriterodantennaexperimenters@yahoogroups.com'
Sent: Wednesday, April 06, 2011 6:25 AM
Subject: RE: [ferriterodantennaexperimenters] Re: FSL recommendations

Dear Steve: Thank you for all the effort and expense of performing the careful experimentation concerning the FSL-studies that most of the rest of us either do not have the time, money, or-most pertinently-working knowledge of electronics to conduct. It is interesting that your conclusion seems to be that there is not much advantage in the FSL versus air core loop other than smaller size. And as a negative is the cost of the ferrites (mitigated partially by using Ebay Russian product), the more complex PVC support system needed (perhaps also a relative issue), and the fragility/durability/reparability of the FSL versus the air core loop. The Litz issue mirrors my own experience with Litz wound ferrite bar antennas-the more strands the more conductivity, and 660/46 Litz versus 28 AWG multi-strand pick up wire windings for a primary coil is the difference between day and night-the crystal radio guys certainly have that right! The Litz that I have used was purchased from Dave Schmarder; do you have any experience with the Ebay 660/46 Litz product-looks like it comes from Mainland China. I think I'll stick with my ferrite bar set ups for now; again, many thanks!

Raph Pollock

417. Magnet Wire : Expensive : Why?

Yahoo group: ferriterodantennaexperimenters
Date: 2011-04-29 04:04:46 UTC
From: Adam E
Topic: 417 Message: 417

I was on the radio shack website and I found out that the magnet wire prices increased from $6.99 to $7.39. Why is this happenning? If they keep on going up, I am going to have to find magnet wire somewhere else and in bigger spools and build higher inductance ferrite coils that I have built before. These packs are beginning to be the thing of the past for me. The pack of magnet wire should be less than $7 for the 3 small spools. They only give you 3 rolls of 40 feet of 22-gauge wire (for HF coils), 75 feet of 26-gauge wire (for MF coils), 200 feet of 30-gauge wire (for LF/VLF coils). I wish for that price they would double the wire up to 80 feet of 22 gauge wire, 140 feet of 26 gauge wire, 400 feet of 30 gauge wire and sell it for that price. Is this because of those stupid high gas prices? This is sure going to turn away hobbyists and end up discontinuing the product like every other RF electronic part they sell.

Adam Ebel (gccengineering)
Virginia Beach

418. Re: [ferriterodantennaexperimenters] Magnet Wire : Expensive : Why?

Yahoo group: ferriterodantennaexperimenters
Date: 2011-04-29 04:13:54 UTC
From: John Popelish
Topic: 417 Message: 418

On 04/29/2011 12:04 AM, Adam E wrote:
>
>
> I was on the radio shack website and I found out that the
> magnet wire prices increased from $6.99 to $7.39. Why is
> this happenning? If they keep on going up, I am going to
> have to find magnet wire somewhere else and in bigger
> spools and build higher inductance ferrite coils that I
> have built before.
(snip)

In the past year, wholesale copper prices have gone from
something like $1.30/lb to $4.60/lb. It may double, again
in another year. China has a huge demand for copper.

Could you use some 20 AWQ magnet wire? I have lots of it in
short sections (a few ounces to a pound or so, each,
unspooled, just in a loose coil). You can have some for $4
per pound plus $5 for the Priority flat rate envelope, to
ship it.

--
Regards,

John Popelish

419. Re: Magnet Wire : Expensive : Why?

Yahoo group: ferriterodantennaexperimenters
Date: 2011-04-29 04:32:42 UTC
From: Adam E
Topic: 417 Message: 419

20 gauge sounds good but what frequency would it cover? Shortwave? For a ferrite rod, sounds like antenna wire to me for some big loop antenna for AM or LW hold on to it. Is there any 30, 26, and 22 gauge available? I will see what my budget is. Do you also have very long ferrite rods? My KA-35 needs a boost on long wave, the 5 inch 300 turn coil is not cutting it. I need something better for the KA-35 for long wave. Do you have a web address? How many turns would a 20 gauge wire do for Long wave or VLF? How many feet is a pound?

Adam Ebel
Virginia Beach, VA

--- In ferriterodantennaexperimenters@yahoogroups.com, John Popelish <jpopelish@...>
wrote:
>
> On 04/29/2011 12:04 AM, Adam E wrote:
> >
> >
> > I was on the radio shack website and I found out that the
> > magnet wire prices increased from $6.99 to $7.39. Why is
> > this happenning? If they keep on going up, I am going to
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> > have built before.
> (snip)
>
> In the past year, wholesale copper prices have gone from
> something like $1.30/lb to $4.60/lb. It may double, again
> in another year. China has a huge demand for copper.
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> Could you use some 20 AWQ magnet wire? I have lots of it in
> short sections (a few ounces to a pound or so, each,
> unspooled, just in a loose coil). You can have some for $4
> per pound plus $5 for the Priority flat rate envelope, to
> ship it.
>
> --
> Regards,
>
> John Popelish
>

420. Re: [ferriterodantennaexperimenters] Magnet Wire : Expensive : Why?

Yahoo group: ferriterodantennaexperimenters
Date: 2011-04-29 07:32:41 UTC
From: Andy
Topic: 417 Message: 420

> I was on the radio shack website and I found out that the magnet
> wire prices increased from $6.99 to $7.39.

Radio Shack seems to have adjusted all its prices in the last few days. At least that's what it appears, based on a few that I happened to be looking at this week. Most went up, but a few of the ones I looked at actually went down.

> Why is this happenning?

Because Radio Shack always adjusts their prices over time, usually upwards. Keeping up with inflation, even if the parts sit on shelves.

Because copper prices started to skyrocket some three to five years ago, and are still going up.

Because of the effect of fuel on shipping costs. Everything is affected.

That's my opinion.

I wouldn't exactly call Rat Shack the best source of wire at anything close to competitive costs. But for some, there aren't many options that are local to them. That's the price you pay for the convenience.

Andy

421. Re: [ferriterodantennaexperimenters] Re: Magnet Wire : Expensive : Why?

Yahoo group: ferriterodantennaexperimenters
Date: 2011-04-29 15:52:03 UTC
From: John Popelish
Topic: 417 Message: 421

On 04/29/2011 12:32 AM, Adam E wrote:
>
> 20 gauge sounds good but what frequency would it cover?

If you are not worried about perfection, it is useful over a wide frequency range. But, because of skin depth effects, its resistance starts to rise at around 27kHz when the conduction skin depth is roughly the radius of the wire.

http://diyaudioprojects.com/Technical/American-Wire-Gauge/

That doesn't mean it is useless above that frequency, but only that some of the copper is not contributing to the effective conductivity.

> Shortwave? For a ferrite rod, sounds like antenna wire to
> me for some big loop antenna for AM or LW hold on to it.
> Is there any 30, 26, and 22 gauge available?

I'm not selling those sizes, right now. I'm buying them.

> I will see
> what my budget is. Do you also have very long ferrite
> rods? My KA-35 needs a boost on long wave, the 5 inch
> 300 turn coil is not cutting it. I need something better
> for the KA-35 for long wave. Do you have a web address?
> How many turns would a 20 gauge wire do for Long wave or
> VLF? How many feet is a pound?

This reference is my favorite for AWG info.

http://www.pupman.com/listarchives/1998/April/msg00222.html

I don't have answers for your detailed questions. I make long rods by stacking long form ferrite beads inside a plastic pipe. I put up so me records of the results I got and the effects of intentional spaces between the beads, in the files section.

You (anyone in this group) can reach me at the following email, if you want some 20 AWG:

jpopelish at rica dot net

--
Regards,

John Popelish

422. Adding A Loop Antenna Connector To DX-392

Yahoo group: ferriterodantennaexperimenters
Date: 2011-07-08 17:01:27 UTC
From: Adam E
Topic: 422 Message: 422

I want to add a loop antenna connector to the DX-392 for better loop antenna reception. But, I need to know how many turns is required for a better signal for long wave (150 to 519 kHz). How many turns of wire
would I need to achieve best performance for AM and LW band. Also what wire would you recommend for the loop antenna connector project?

Adam Ebel
Virginia Beach, VA

423. Re: Magnet Wire : Expensive : Why?

Yahoo group: ferriterodantennaexperimenters
Date: 2011-07-08 17:04:42 UTC
From: Adam E
Topic: 417 Message: 423

Thanks for the information, 20 AWG sounds good and looks thicker
and 22 AWG. This might be a good size for the antenna coupling project.

Adam Ebel
Virginia Beach, VA

--- In ferriterodantennaexperimenters@yahoogroups.com, John Popelish <jpopelish@...>
wrote:
>
> On 04/29/2011 12:32 AM, Adam E wrote:
> >
> > 20 gauge sounds good but what frequency would it cover?
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> its resistance starts to rise at around 27kHz when the
> conduction skin depth is roughly the radius of the wire.
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> http://diyaudioprojects.com/Technical/American-Wire-Gauge/
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> That doesn't mean it is useless above that frequency, but
> only that some of the copper is not contributing to the
> effective conductivity.
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>
> --
> Regards,
>
> John Popelish
>

424. RE: [ferriterodantennaexperimenters] Re: Magnet Wire : Expensive : Why?

Yahoo group: ferriterodantennaexperimenters
Date: 2011-07-08 17:11:25 UTC
From: Pollock,Raphael E
Topic: 417 Message: 424
Attachments: 2 described; binary payloads are missing from this source WARC

Stormwise.com still has some long 125 mu ferrite rods suitable for this purpose.
Multi-strand Litz wire is great to avoid the "skin effect"

From: ferriterodantennaexperimenters@yahoogroups.com
[mailto:ferriterodantennaexperimenters@yahoogroups.com] On Behalf Of Adam E
Sent: Friday, July 08, 2011 12:05 PM
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: [ferriterodantennaexperimenters] Re: Magnet Wire : Expensive : Why?

Thanks for the information, 20 AWG sounds good and looks thicker
and 22 AWG. This might be a good size for the antenna coupling project.

Adam Ebel
Virginia Beach, VA

--- In ferriterodantennaexperimenters@yahoogroups.com<mailto:ferriterodantennaexperimenter
s%40yahoogroups.com>, John Popelish <jpopelish@...> wrote:
>
> On 04/29/2011 12:32 AM, Adam E wrote:
> >
> > 20 gauge sounds good but what frequency would it cover?
>
> If you are not worried about perfection, it is useful over a
> wide frequency range. But, because of skin depth effects,
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> http://diyaudioprojects.com/Technical/American-Wire-Gauge/
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> That doesn't mean it is useless above that frequency, but
> only that some of the copper is not contributing to the
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> I'm not selling those sizes, right now. I'm buying them.
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> > rods? My KA-35 needs a boost on long wave, the 5 inch
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> > for the KA-35 for long wave. Do you have a web address?
> > How many turns would a 20 gauge wire do for Long wave or

> > VLF? How many feet is a pound?
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> http://www.pupman.com/listarchives/1998/April/msg00222.html
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> I don't have answers for your detailed questions. I make
> long rods by stacking long form ferrite beads inside a
> plastic pipe. I put up so me records of the results I got
> and the effects of intentional spaces between the beads, in
> the files section.
>
> You (anyone in this group) can reach me at the following
> email, if you want some 20 AWG:
>
> jpopelish at rica dot net
>
> --
> Regards,
>
> John Popelish
>

425. How Do I Make A MW (AM) Coil and SW Coil?

Yahoo group: ferriterodantennaexperimenters
Date: 2011-10-24 22:27:08 UTC
From: Adam E
Topic: 425 Message: 425

It's been a very long time since I needed to post this, but I have built many LW coils very easily cause the ferrite rod was 4.5 inches so to make my long wave coil I just winded probably 250 to 300 turns on the ferrite rod, now I am trying to go back in making a AM coil, but is 175 turns really the measurement I need to use? Or should I use less?

The wire I used to make the LW coil was the 30 awg wire up to 300 turns. It would be alot easier if I had a inductance meter to measure the ferrite rod coil inductance.

Overview

MW Coil - ???? turns 30 awg magnet wire 4.5 inch ferrite rod
LW Coil - 250 to 300 turns 30 awg magnet wire 4.5 inch ferrite rod

I want to make different other coils for VLF and AM, and Shortwave
can someone help me out with this?

Adam Ebel
Virginia Beach, VA

426. WTB

Yahoo group: ferriterodantennaexperimenters
Date: 2012-04-25 22:05:08 UTC
From: radiotech750
Topic: 426 Message: 426

I want to buy an AM BCB antenna for my PL660! Does anyone have a good one for sale

427. New file uploaded to ferriterodantennaexperimenters

Yahoo group: ferriterodantennaexperimenters
Date: 2012-05-30 02:17:46 UTC
From: ferriterodantennaexperimenters@yahoogroup
Topic: 59 Message: 427

Hello,

This email message is a notification to let you know that
a file has been uploaded to the Files area of the ferriterodantennaexperimenters
group.

File : /ExperimentsWithaLoopstickAntennausingToroids[1].pdf
Uploaded by : everettsharp74 <everettsharp@...>
Description : Experiments with a Loop Stick Antenna using Stacked Toroids

You can access this file at the URL:
http://groups.yahoo.com/group/ferriterodantennaexperimenters/files/ExperimentsWithaLoopsti
ckAntennausingToroids%5B1%5D.pdf

To learn more about file sharing for your group, please visit:
http://help.yahoo.com/l/us/yahoo/groups/original/members/web/index.html
Regards,

everettsharp74 <everettsharp@...>

428. New file uploaded to ferriterodantennaexperimenters

Yahoo group: ferriterodantennaexperimenters
Date: 2012-06-16 13:57:13 UTC
From: ferriterodantennaexperimenters@yahoogroup
Topic: 59 Message: 428

Hello,

This email message is a notification to let you know that
a file has been uploaded to the Files area of the ferriterodantennaexperimenters
group.

File : /ComparativetestingofTheStackedToroidLoopStickAntennaTo
Uploaded by : everettsharp74 <everettsharp@...>
Description : Comparing The Stacked Toroid Loop Stick Antenna to a 2' Box Air Loop

You can access this file at the URL:
http://groups.yahoo.com/group/ferriterodantennaexperimenters/files/ComparativetestingofThe
StackedToroidLoopStickAntennaTo

To learn more about file sharing for your group, please visit:
http://help.yahoo.com/l/us/yahoo/groups/original/members/web/index.html
Regards,

everettsharp74 <everettsharp@...>

429. Everett's stacked toroid antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2012-06-17 16:49:47 UTC
From: jpopelish
Topic: 429 Message: 429

I looked over your report on the stacked toroid loop-stick antenna you constructed and tested. I wonder if you have read my report on somewhat similar constructed ferrite bars (in the Popelish file folder).

I found that stacked cores act sort of like a magnetic version of a carbon granule microphone, where small vibrations or forces alter the contact between the toroids and introduce changes in the inductance of the coil, so that these vibrational signals are injected into the RF signals. Adding thin spacers (i.e. sheet of paper, plastic film or file card) between the toroids essentially eliminates this effect. Those spaces also slightly lower the coil inductance, but also slightly increase the coil Q, so the net effect may be beneficial to antenna sensitivity and selectivity, especially at the upper end of the tuning range. Thin spaces worked best at the lower frequency end, while thicker spaces worked best at the upper end.

--
Regards,

John Popelish

430. Re: [ferriterodantennaexperimenters] Everett's stacked toroid antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2012-06-17 19:57:05 UTC
From: everettsharp@aol.com
Topic: 429 Message: 430

Hi John,

Yes I did look over the various articles that you had posted, but was a little confused about the data, as most of your work was done at very low frequencies and I did not see where it applied to what I was doing. I have also read a lot of what was posted on Rap 'N Tap on spacing the toroids. I also communicated with Mike Tuggle. Mike said that if you could not read any resistance, or a very high resistance that there was no need to use any spacing between the toroids. Using a VOM, at the 10,000 K scale I did not get any reading at all and moved the probes all over sever of the toroids.

I have no way to test Q, but the tuning, in all of the configurations, was very sharp, much sharper then anything I have experimented with to date. Last night I put the, 3 coils in parallel, back on the STLS, for the tropical bands and compared it to 50" box air loop on 75 M and it worked as well, however, at first it did not give as high of S meter readings as the air loop, but after moveing the induction pick-up, ferrite loop, closer to the STLS it then gave about the same S meter readings.

I don't know how you could ask this thing to work any better than what it does. I am amazed at how well it works. I have also compared it to my Quantum Loop QX, on MW and it works better then the QLQX, with out the regen on. It picks up more and has sharper tuning, however, with the amp gain turned up the QLQX does give higher S meter readings, but does not hear any better.

Did you ever check the resistance of the ferrite that you were using, and if so what did you get? Also I read, with interest some postings that you had where you were experimenting with iron powder and small pieces of cut wire and were imbedding it in epoxy. How did that work and have you done any more experimenting along those lines. If that would, or could, work then one could take 2 sizes Sonotube, or PVC pipe and make a ferrite core tube of some kind. I am retired, but do still do some consulting and could get my hands on several different metals and non metal materials. Have you ever looked at Silicon Metal (Si), of 50%, or 75% Ferro Silicon (FeSi). The latter two contain iron, but are not magnetic. I also have access to a kiln, however, all of the firing is done at 2,000 deg F and it could be fired in reducing conditions.

If you have any ideas along the lines, mentioned above, I might give it a try sometime.

73's Everett

In a message dated 6/17/2012 11:51:45 A.M. Central Daylight Time, jpopelish@... writes:

I looked over your report on the stacked toroid loop-stick antenna you constructed and tested. I wonder if you have read my report on somewhat similar constructed ferrite bars (in the Popelish file folder).

I found that stacked cores act sort of like a magnetic version of a carbon granule microphone, where small vibrations or forces alter the contact between the toroids and introduce changes in the inductance of the coil, so that these vibrational signals are injected into the RF signals. Adding thin spacers (i.e. sheet of paper, plastic film or file card) between the toroids essentially eliminates this effect. Those spaces also slightly lower the coil inductance, but also slightly increase the coil Q, so the net effect may be beneficial to antenna sensitivity and selectivity, especially at the upper end of the tuning range. Thin spaces worked best at the lower frequency end, while thicker spaces worked best at the upper end.

--
Regards,

John Popelish

431. Re: [ferriterodantennaexperimenters] Everett's stacked toroid antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2012-06-18 01:04:59 UTC
From: John Popelish
Topic: 429 Message: 431

On 06/17/2012 03:57 PM, everettsharp@... wrote:
> Hi John,
>
> Yes I did look over the various articles that you had
> posted, but was a little confused about the data, as most
> of your work was done at very low frequencies and I did
> not see where it applied to what I was doing.

The key to understanding all the graphs of my data is to understand the shorthand abbreviations I used for each of the different experiments. These are the trace labels on the graphs. If I would have made a separate graph for each experiment, they could have been labeled more clearly, but then it would have been harder to compare somewhat similar results. If you need help deciphering all those trial codes, let me know, and I will review and explain each of them.

> I have also read a lot of what was posted on Rap 'N Tap
> on spacing the toroids. I also communicated with Mike
> Tuggle. Mike said that if you could not read any
> resistance, or a very high resistance that there was no
> need to use any spacing between the toroids. Using a
> VOM, at the 10,000 K scale I did not get any reading at
> all and moved the probes all over sever of the toroids.

That test is good for very low frequency ferrite materials, that have a low bulk resistivity (where you can measure a fer hundred of thousand ohms between two points on one core). But I think the high frequency material you used has such a high bulk resistivity, that you cannot measure any resistance between two points on a single core, so you certainly cannot judge what the contact between the two cores is, by this method.

Besides, the problem is not one of resistivity, but of permeability variation during vibration. And, of course,my experiments showed raised Q over a broad band of frequencies for each material when I added gaps.

You might listen to a clear station with your ferrite rod and see if you can hear any clicks in the audio, if you tap on the end of the rod.

> I have no way to test Q, but the tuning, in all of the
> configurations, was very sharp, much sharper then
> anything I have experimented with to date. Last night I

> put the, 3 coils in parallel, back on the STLS, for the
> tropical bands and compared it to 50" box air loop on 75
> M and it worked as well, however, at first it did not
> give as high of S meter readings as the air loop, but
> after moveing the induction pick-up, ferrite loop, closer
> to the STLS it then gave about the same S meter
> readings.

If your meter does not saturate, perhaps you can find a fairly local station that transmits at a precisely constant power, so that you can use its signal to compare successive experiments with your S meter. If not, then you can use any of your air core loops as a standard to compare trials that take place at different times, with possibly different signal strengths.

It is really helpful to be able to quantify the relative difference in signal sensitivity for different experiments. I used a local AM station and an RF RMS millivolt meter, directly across the tuned coil for some of my comparisons.

> I don't know how you could ask this thing to work any
> better than what it does. I am amazed at how well it
> works. I have also compared it to my Quantum Loop QX, on
> MW and it works better then the QLQX, with out the regen
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> Did you ever check the resistance of the ferrite that you
> were using, and if so what did you get? Also I read, with
> interest some postings that you had where you were
> experimenting with iron powder and small pieces of cut
> wire and were imbedding it in epoxy. How did that work
> and have you done any more experimenting along those
> lines.

All of the iron powder and iron wire cores I made were disappointing. Their best results were at very low frequencies, like 60kHz, but even there, they were sad, compared to ferrite.

> If that would, or could, work then one could take
> 2 sizes Sonotube, or PVC pipe and make a ferrite core
> tube of some kind. I am retired, but do still do some
> consulting and could get my hands on several different
> metals and non metal materials. Have you ever looked at
> Silicon Metal (Si), of 50%, or 75% Ferro Silicon (FeSi).
> The latter two contain iron, but are not magnetic. I
> also have access to a kiln, however, all of the firing
> is done at 2,000 deg F and it could be fired in reducing

> conditions.

I haven't tried anything exotic. I was hoping that some common iron wire would be useful for some kinds of antennas. The results are in one of my reports.

> If you have any ideas along the lines, mentioned above, I
> might give it a try sometime.

If you can get the ferrite for a reasonable price (I chose the long form EMI beads, instead of shorter toroids, for their low price per length) then I think iron wire cores are not worth your effort. But, in a third world country, iron wire may be better than nothing, for some low frequency (way under 1MHz), since they might save you most of the copper needed for an air core loop of the same sensitivity.

--
Regards,

John Popelish

432. Re: [ferriterodantennaexperimenters] Everett's stacked toroid antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2012-06-18 11:55:57 UTC
From: everettsharp@aol.com
Topic: 429 Message: 432
Attachments: 1 described; binary payloads are missing from this source WARC

John,

Thanks for the reply and info. I am leaving today for a fishing trip so i
won't have time to dig into to you articles until I return. I have a
article that I will be posting soon and I thought that you might be interested in
seeing it before I post it.

Everett

In a message dated 6/17/2012 8:05:08 P.M. Central Daylight Time,
jpopelish@... writes:

On 06/17/2012 03:57 PM, _everettsharp@..._
(mailto:everettsharp@...) wrote:
> Hi John,
>
> Yes I did look over the various articles that you had
> posted, but was a little confused about the data, as most
> of your work was done at very low frequencies and I did
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certainly cannot judge what the contact between the two
cores is, by this method.

Besides, the problem is not one of resistivity, but of permeability variation during vibration. And, of course,my experiments showed raised Q over a broad band of frequencies for each material when I added gaps.

You might listen to a clear station with your ferrite rod and see if you can hear any clicks in the audio, if you tap on the end of the rod.

> I have no way to test Q, but the tuning, in all of the
> configurations, was very sharp, much sharper then
> anything I have experimented with to date. Last night I
> put the, 3 coils in parallel, back on the STLS, for the
> tropical bands and compared it to 50" box air loop on 75
> M and it worked as well, however, at first it did not
> give as high of S meter readings as the air loop, but
> after moveing the induction pick-up, ferrite loop, closer
> to the STLS it then gave about the same S meter
> readings.

If your meter does not saturate, perhaps you can find a fairly local station that transmits at a precisely constant power, so that you can use its signal to compare successive experiments with your S meter. If not, then you can use any of your air core loops as a standard to compare trials that take place at different times, with possibly different signal strengths.

It is really helpful to be able to quantify the relative difference in signal sensitivity for different experiments. I used a local AM station and an RF RMS millivolt meter, directly across the tuned coil for some of my comparisons.

> I don't know how you could ask this thing to work any
> better than what it does. I am amazed at how well it
> works. I have also compared it to my Quantum Loop QX, on
> MW and it works better then the QLQX, with out the regen
> on. It picks up more and has sharper tuning, however,
> with the amp gain turned up the QLQX does give higher S
> meter readings, but does not hear any better.
>
> Did you ever check the resistance of the ferrite that you
> were using, and if so what did you get? Also I read, with
> interest some postings that you had where you were
> experimenting with iron powder and small pieces of cut
> wire and were imbedding it in epoxy. How did that work
> and have you done any more experimenting along those
> lines.

All of the iron powder and iron wire cores I made were disappointing. Their best results were at very low frequencies, like 60kHz, but even there, they were sad, compared to ferrite.

> If that would, or could, work then one could take
> 2 sizes Sonotube, or PVC pipe and make a ferrite core
> tube of some kind. I am retired, but do still do some
> consulting and could get my hands on several different
> metals and non metal materials. Have you ever looked at
> Silicon Metal (Si), of 50%, or 75% Ferro Silicon (FeSi).
> The latter two contain iron, but are not magnetic. I
> also have access to a kiln, however, all of the firing
> is done at 2,000 deg F and it could be fired in reducing
> conditions.

I haven't tried anything exotic. I was hoping that some
common iron wire would be useful for some kinds of antennas.
The results are in one of my reports.

> If you have any ideas along the lines, mentioned above, I
> might give it a try sometime.

If you can get the ferrite for a reasonable price (I chose
the long form EMI beads, instead of shorter toroids, for
their low price per length) then I think iron wire cores are
not worth your effort. But, in a third world country, iron
wire may be better than nothing, for some low frequency (way
under 1MHz), since they might save you most of the copper
needed for an air core loop of the same sensitivity.

--
Regards,

John Popelish

433. Re: Everett's stacked toroid antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2012-06-26 05:28:28 UTC
From: lowalacrity
Topic: 429 Message: 433

Greetings,
I recently fabricated one one of Everett's stacked toroid loop sticks as I wanted something high performance and relatively portable. I also wound the 3 litz coils on clear plastic forms to allow for interchangeability. The only difference that might affect performance, compared with Everett's, is the litz wire I used has fewer strands, (180 vs 330). I have copious quantities is why I went with it initially. Now that it's proven. I'll have to wind some higher count ones. I got lots of the forms too. As far as it's performance, I will back up Everett's claims, at least om MW, comparable readability with less noise. In one case, Readability seemed better, i.e. barely audible muddy signal was more readable.
This station is actually a Travelers Information Radio Station at 530 KHz. I calculated it is located about 25 miles out. Not sure of the power, but they're not allowed more than 10 watts out. They also employ a low-pass filter that rolls off at 3 khz. Hence the poor audio quality. My 2.5 ft octo air loop picks it up fine... along with plenty of noise. The noise was noticeably less with the STLS, but the signal just as strong and a bit more readable. Mind you this is using the smaller litz. The receiver I used, for the most part was a Tecsun PL-230 as it performed the best for its size. I will put pictures of the test components in the photos section. Also plan on long wave testing as soon as I wind the larger litz coils. His wind counts are dead on. This contra wound loop is worth pursuing...

73,
John

434. Re: Everett's stacked toroid antenna/ RF Millivolt Meters

Yahoo group: ferriterodantennaexperimenters
Date: 2012-07-02 10:51:04 UTC
From: Everett
Topic: 429 Message: 434

Hi John,

What brand and model Millivolt meter are you using for testing your loop antennas? and what procedure are you using for the hook up and testing? I have been looking on eBay at Millivolt meters, but want to know more before taking the leap. Also, knowing what you know now,would you still buy the same meter, or would you buy something else?

Everett

--- In ferriterodantennaexperimenters@yahoogroups.com, John Popelish <jpopelish@...> wrote:
>
> On 06/17/2012 03:57 PM, everettsharp@... wrote:
> > Hi John,
> >
> > Yes I did look over the various articles that you had
> > posted, but was a little confused about the data, as most
> > of your work was done at very low frequencies and I did
> > not see where it applied to what I was doing.
>
> The key to understanding all the graphs of my data is to
> understand the shorthand abbreviations I used for each of
> the different experiments. These are the trace labels on
> the graphs. If I would have made a separate graph for each
> experiment, they could have been labeled more clearly, but
> then it would have been harder to compare somewhat similar
> results. If you need help deciphering all those trial
> codes, let me know, and I will review and explain each of them.
>
> > I have also read a lot of what was posted on Rap 'N Tap
> > on spacing the toroids. I also communicated with Mike
> > Tuggle. Mike said that if you could not read any
> > resistance, or a very high resistance that there was no
> > need to use any spacing between the toroids. Using a
> > VOM, at the 10,000 K scale I did not get any reading at
> > all and moved the probes all over sever of the toroids.
>
> That test is good for very low frequency ferrite materials,
> that have a low bulk resistivity (where you can measure a
> fer hundred of thousand ohms between two points on one
> core). But I think the high frequency material you used has
> such a high bulk resistivity, that you cannot measure any
> resistance between two points on a single core, so you
> certainly cannot judge what the contact between the two
> cores is, by this method.
>

> Besides, the problem is not one of resistivity, but of
> permeability variation during vibration. And, of course,my
> experiments showed raised Q over a broad band of frequencies
> for each material when I added gaps.
>
> You might listen to a clear station with your ferrite rod
> and see if you can hear any clicks in the audio, if you tap
> on the end of the rod.
>
> > I have no way to test Q, but the tuning, in all of the
> > configurations, was very sharp, much sharper then
> > anything I have experimented with to date. Last night I
> > put the, 3 coils in parallel, back on the STLS, for the
> > tropical bands and compared it to 50" box air loop on 75
> > M and it worked as well, however, at first it did not
> > give as high of S meter readings as the air loop, but
> > after moveing the induction pick-up, ferrite loop, closer
> > to the STLS it then gave about the same S meter
> > readings.
>
> If your meter does not saturate, perhaps you can find a
> fairly local station that transmits at a precisely constant
> power, so that you can use its signal to compare successive
> experiments with your S meter. If not, then you can use any
> of your air core loops as a standard to compare trials that
> take place at different times, with possibly different
> signal strengths.
>
> It is really helpful to be able to quantify the relative
> difference in signal sensitivity for different experiments.
> I used a local AM station and an RF RMS millivolt meter,
> directly across the tuned coil for some of my comparisons.
>
> > I don't know how you could ask this thing to work any
> > better than what it does. I am amazed at how well it
> > works. I have also compared it to my Quantum Loop QX, on
> > MW and it works better then the QLQX, with out the regen
> > on. It picks up more and has sharper tuning, however,
> > with the amp gain turned up the QLQX does give higher S
> > meter readings, but does not hear any better.
> >
> > Did you ever check the resistance of the ferrite that you
> > were using, and if so what did you get? Also I read, with
> > interest some postings that you had where you were
> > experimenting with iron powder and small pieces of cut
> > wire and were imbedding it in epoxy. How did that work
> > and have you done any more experimenting along those
> > lines.
>
> All of the iron powder and iron wire cores I made were

> disappointing. Their best results were at very low
> frequencies, like 60kHz, but even there, they were sad,
> compared to ferrite.
>
> > If that would, or could, work then one could take
> > 2 sizes Sonotube, or PVC pipe and make a ferrite core
> > tube of some kind. I am retired, but do still do some
> > consulting and could get my hands on several different
> > metals and non metal materials. Have you ever looked at
> > Silicon Metal (Si), of 50%, or 75% Ferro Silicon (FeSi).
> > The latter two contain iron, but are not magnetic. I
> > also have access to a kiln, however, all of the firing
> > is done at 2,000 deg F and it could be fired in reducing
> > conditions.
>
> I haven't tried anything exotic. I was hoping that some
> common iron wire would be useful for some kinds of antennas.
> The results are in one of my reports.
>
> > If you have any ideas along the lines, mentioned above, I
> > might give it a try sometime.
>
> If you can get the ferrite for a reasonable price (I chose
> the long form EMI beads, instead of shorter toroids, for
> their low price per length) then I think iron wire cores are
> not worth your effort. But, in a third world country, iron
> wire may be better than nothing, for some low frequency (way
> under 1MHz), since they might save you most of the copper
> needed for an air core loop of the same sensitivity.
>
> --
> Regards,
>
> John Popelish
>

435. Re: [ferriterodantennaexperimenters] Re: Everett's stacked toroid antenna/ RF Millivolt Meters

Yahoo group: ferriterodantennaexperimenters
Date: 2012-07-03 00:05:55 UTC
From: John Popelish
Topic: 429 Message: 435

On 07/02/2012 06:51 AM, Everett wrote:
> Hi John,
>
> What brand and model Millivolt meter are you using for
> testing your loop antennas? and what procedure are you
> using for the hook up and testing? I have been looking on
> eBay at Millivolt meters, but want to know more before
> taking the leap. Also, knowing what you know now,would
> you still buy the same meter, or would you buy something
> else?

I used a Hewlett Packard HP400EL RMS voltmeter.
http://www.testelectronics.com/used/hp400el.htm
There are many, slightly different models of this meter.
They come up, quite often on eBay.

--
Regards,

John Popelish

436. Re: [ferriterodantennaexperimenters] Re: Everett's stacked toroid antenna/ RF Millivolt Meters

Yahoo group: ferriterodantennaexperimenters
Date: 2012-07-03 02:32:34 UTC
From: Everett
Topic: 429 Message: 436

John,

TNX for the info, I got the same answer from Eb Keller on the Millivoltmeter. Are you, or do you use any kind of probe with it for your test?

Everett

-----Original Message-----
From: John Popelish <jpopelish@gmail.com>
To: ferriterodantennaexperimenters <ferriterodantennaexperimenters@yahoogroups.com>
Sent: Mon, Jul 2, 2012 7:06 pm
Subject: Re: [ferriterodantennaexperimenters] Re: Everett's stacked toroid antenna/ RF Millivolt Meters

On 07/02/2012 06:51 AM, Everett wrote:
> Hi John,
>
> What brand and model Millivolt meter are you using for
> testing your loop antennas? and what procedure are you
> using for the hook up and testing? I have been looking on
> eBay at Millivolt meters, but want to know more before
> taking the leap. Also, knowing what you know now,would
> you still buy the same meter, or would you buy something
> else?

I used a Hewlett Packard HP400EL RMS voltmeter.
http://www.testelectronics.com/used/hp400el.htm
There are many, slightly different models of this meter.
They come up, quite often on eBay.

--
Regards,

John Popelish

437. Re: [ferriterodantennaexperimenters] Re: Everett's stacked toroid antenna/ RF Millivolt Meters

Yahoo group: ferriterodantennaexperimenters
Date: 2012-07-03 18:47:14 UTC
From: John Popelish
Topic: 429 Message: 437

On 07/02/2012 10:32 PM, Everett wrote:
>
>
> John,
>
> TNX for the info, I got the same answer from Eb Keller on
> the Millivoltmeter. Are you, or do you use any kind of probe
> with it for your test?

I used a X1 scope probe to connect the meter to the coil.
So, just directly wired.

--
Regards,

John Popelish

438. Making Ferrite Rod Coils

Yahoo group: ferriterodantennaexperimenters
Date: 2012-07-15 19:10:44 UTC
From: Adam E
Topic: 438 Message: 438

I am trying to make a long wave (LF) 300 turn 30 awg magnet wire coil that will cover 140 to 400 kHz and the problem is that when I wind it, it starts unraveling. So I used packing tape, and then it started coming loose. Is there some kind of glue or something that holds the coil in place? I wish that they would have a ferrite rod antenna making kit with all of the sticks, tubes, and glue, and ferrite rods that you need to make ferrite antennas. They are so hard to make.

Adam Ebel
Virginia Beach, VA

439. Re: Making Ferrite Rod Coils

Yahoo group: ferriterodantennaexperimenters
Date: 2012-07-15 20:10:57 UTC
From: John
Topic: 438 Message: 439

GC once made "Q Dope", essentially thinned Duco Cement, a polystyrene glue nearly anything product in a jar with a brush. Make sure Duco Cement hasn't changed - it should be transparent wet and dried. It actually worked quite well. Have you thought about smaller Litz wire in place of the #30 enamel?

John

--- In ferriterodantennaexperimenters@yahoogroups.com, "Adam E" <gccengineering@...> wrote:
>
>
>
> I am trying to make a long wave (LF) 300 turn 30 awg magnet wire coil that will cover 140 to 400 kHz and the problem is that when I wind it, it starts unraveling. So I used packing tape, and then it started coming loose. Is there some kind of glue or something that holds the coil in place? I wish that they would have a ferrite rod antenna making kit with all of the sticks, tubes, and glue, and ferrite rods that you need to make ferrite antennas. They are so hard to make.
>
>
> Adam Ebel
> Virginia Beach, VA
>

440. Re: [ferriterodantennaexperimenters] Making Ferrite Rod Coils

Yahoo group: ferriterodantennaexperimenters
Date: 2012-07-15 21:44:31 UTC
From: John Popelish
Topic: 438 Message: 440

On 07/15/2012 03:10 PM, Adam E wrote:
>
>
> I am trying to make a long wave (LF) 300 turn 30 awg
> magnet wire coil that will cover 140 to 400 kHz and the
> problem is that when I wind it, it starts unraveling. So
> I used packing tape, and then it started coming loose.
> Is there some kind of glue or something that holds the
> coil in place? I wish that they would have a ferrite rod
> antenna making kit with all of the sticks, tubes, and
> glue, and ferrite rods that you need to make ferrite
> antennas. They are so hard to make.

For experimental work, I like to melt a little beeswax in a
bottle cap or other small dish, and brush it over the
winding, to hold it together, temporarily. It is not very
rugged, but allows the wire to be unwound and rewound,
without damage to the insulation.

--
Regards,

John Popelish

441. Re: [ferriterodantennaexperimenters] Making Ferrite Rod Coils

Yahoo group: ferriterodantennaexperimenters
Date: 2012-07-15 19:57:37 UTC
From: kevin asato
Topic: 438 Message: 441

A drop of Q-Dope, nail polish, hot glue. Just let it dry or cool and things should be OK.
73,
kevin
kc6pob

From: Adam E <gccengineering@...>
To: ferriterodantennaexperimenters@yahoogroups.com
Sent: Sunday, July 15, 2012 12:10 PM
Subject: [ferriterodantennaexperimenters] Making Ferrite Rod Coils

I am trying to make a long wave (LF) 300 turn 30 awg magnet wire coil that will cover 140 to 400 kHz and the problem is that when I wind it, it starts unraveling. So I used packing tape, and then it started coming loose. Is there some kind of glue or something that holds the coil in place? I wish that they would have a ferrite rod antenna making kit with all of the sticks, tubes, and glue, and ferrite rods that you need to make ferrite antennas. They are so hard to make.

Adam Ebel
Virginia Beach, VA

442. Re: Making Ferrite Rod Coils

Yahoo group: ferriterodantennaexperimenters
Date: 2012-07-18 21:04:48 UTC
From: ME
Topic: 438 Message: 442

Adam,

Which antenna are you building?
--- In ferriterodantennaexperimenters@yahoogroups.com, "Adam E" <gccengineering@...>
wrote:
>
>
>
> I am trying to make a long wave (LF) 300 turn 30 awg magnet wire coil that will cover 140
to 400 kHz and the problem is that when I wind it, it starts unraveling.

443. Re: Making Ferrite Rod Coils

Yahoo group: ferriterodantennaexperimenters
Date: 2013-03-15 10:24:35 UTC
From: Adam E
Topic: 438 Message: 443

Sorry it's been so long. Right now the antenna is torn down and I have to get a new ferrite rod from Amidon soon, but my KA-35 is backing me up for the time being. If you can help me find some other great places for ferrite rods 7.5 inches or longer, please let me know. Thanks.

Adam Ebel
Virginia Beach, VA

--- In ferriterodantennaexperimenters@yahoogroups.com, "ME" <trailstmpr@...> wrote:
>
>
> Adam,
>
> Which antenna are you building?
> --- In ferriterodantennaexperimenters@yahoogroups.com, "Adam E" <gccengineering@> wrote:
> >
> >
> >
> > I am trying to make a long wave (LF) 300 turn 30 awg magnet wire coil that will cover 140 to 400 kHz and the problem is that when I wind it, it starts unraveling.
>

444. Re: [ferriterodantennaexperimenters] Re: Making Ferrite Rod Coils

Yahoo group: ferriterodantennaexperimenters
Date: 2013-03-15 17:19:14 UTC
From: John Popelish
Topic: 438 Message: 444

On 03/15/2013 06:24 AM, Adam E wrote:
(snip)
> If you can help me find some other great places for
> ferrite rods 7.5 inches or longer, please let me know.
> Thanks.

I just saw large ferrite rods, in several materials, on
ebay. I think there are choices for type 61, 43 and 33 (and
some Russian stuff). The higher permeability, type 33 would
probably be best for low frequency operation.

http://www.ebay.com/itm/Large-Balun-Ferrite-Rods-10x200mm-Lot-of-4-/251214801243

http://www.ebay.com/itm/Rod-ferrite-mm12x200-1-piece-/400351703864

http://www.ebay.com/itm/61-Material-Ferrite-Rod-Diameter-0-5-Length-7-5-/180979922514

http://www.ebay.com/itm/33-Material-Ferrite-Rod-Diameter-0-5-Length-7-5-/160982974678

But a stack of low frequency (higher permeability) long form
beads would work well, also, and probably at a lower cost.

something like these:

http://www.digikey.com/product-detail/en/LFB143064-000/240-2279-ND/703467

--
Regards,

John Popelish

445. RE: [ferriterodantennaexperimenters] Re: Making Ferrite Rod Coils

Yahoo group: ferriterodantennaexperimenters
Date: 2013-03-15 12:18:13 UTC
From: Pollock,Raphael E
Topic: 438 Message: 445

Try Stormwise.com

From: ferriterodantennaexperimenters@yahoogroups.com
[mailto:ferriterodantennaexperimenters@yahoogroups.com] On Behalf Of Adam E
Sent: Friday, March 15, 2013 5:25 AM
To: ferriterodantennaexperimenters@yahoogroups.com
Subject: [ferriterodantennaexperimenters] Re: Making Ferrite Rod Coils

Sorry it's been so long. Right now the antenna is torn down and I have to get a new ferrite rod from Amidon soon, but my KA-35 is backing me up for the time being. If you can help me find some other great places for ferrite rods 7.5 inches or longer, please let me know. Thanks.

Adam Ebel
Virginia Beach, VA

--- In ferriterodantennaexperimenters@yahoogroups.com<mailto:ferriterodantennaexperimenters%40yahoogroups.com>, "ME" <trailstmpr@...<mailto:trailstmpr@...>> wrote:
>
>
> Adam,
>
> Which antenna are you building?
> --- In ferriterodantennaexperimenters@yahoogroups.com<mailto:ferriterodantennaexperimenters%40yahoogroups.com>, "Adam E" <gccengineering@> wrote:
> >
> >
> >
> > I am trying to make a long wave (LF) 300 turn 30 awg magnet wire coil that will cover 140 to 400 kHz and the problem is that when I wind it, it starts unraveling.
>

446. Litz Wire

Yahoo group: ferriterodantennaexperimenters
Date: 2013-03-22 18:25:20 UTC
From: Sudipta, VU3TKG
Topic: 446 Message: 446

Hi all!
Greetings! This is my first post. I have obtained about 400gms of 6/46 Litz wire from a local supplier. I hope it will be suitable for building my antenna. This was the only variety available now.
Can any member tell me as to how I go for soldering the Litz Wire?
73
de VU3TKG

447. Re: Litz Wire

Yahoo group: ferriterodantennaexperimenters
Date: 2013-03-23 13:27:48 UTC
From: Tom McKee
Topic: 446 Message: 447

Sudipta,

Litz wire normally has each wire covered with an insulating coating that melts in the presence of molten solder. Just try rubbing the end of the bundle in a little pool of solder on the tip of a soldering iron. It may take a little rubbing of the bundle in the pool to get the insulating coating removed.

--
Fox News Blame Deflector at work: The problem isn't the rich with their low tax rates, loopholes & offshore tax havens, it's those poor folks on SNAPS.

Tom McKee Twitter: @MacZad <https://twitter.com/MacZad>
==========
My Blog <http://www.maczads-musings.imradioha.org/> about things that matter.
Inland Marine Radio History Archive <http://www.imradioha.org>
GE Mobile Radio History <http://www.gemradioha.org>
Swing Music Broadcasts <http://swing-sked.wikispaces.com/>
Joyce McKee's Art Gallery Page
<http://www.fineartsleagueofcary.org/mckee.htm>

448. Site in the air

Yahoo group: ferriterodantennaexperimenters
Date: 2013-06-06 15:47:02 UTC
From: Wagner Dabarian
Topic: 448 Message: 448

Greetings to all.
Invite all friends to visit the site www.antenadx.com.br
This work was done with great affection for all of us.
For those who like projects antennas, couplers, and others, are compiled more than 1000 files to query.
I thank the friends of the brotherhood of the soldering iron and good fun.
73
Wagner
PU2NOL
Brazil

449. Re: [ferriterodantennaexperimenters] Site in the air

Yahoo group: ferriterodantennaexperimenters
Date: 2013-06-06 15:54:04 UTC
From: Ernie Rice
Topic: 448 Message: 449

It's not in American! Can't read it. Is there am American version?

Ernie

Sent from my iPhone

On Jun 6, 2013, at 11:47, "Wagner Dabarian" <pu2nol@gmail.com> wrote:

> Greetings to all.
> Invite all friends to visit the site www.antenadx.com.br
> This work was done with great affection for all of us.
> For those who like projects antennas, couplers, and others, are compiled more than 1000 files to query.
> I thank the friends of the brotherhood of the soldering iron and good fun.
> 73
> Wagner
> PU2NOL
> Brazil
>
>

450. RE: [ferriterodantennaexperimenters] Site in the air

Yahoo group: ferriterodantennaexperimenters
Date: 2013-06-06 21:15:20 UTC
From: dx11
Topic: 448 Message: 450

It's not in American! Can't read it. Is there am American version?

Ernie

Sorry Ernie, American is not a language.

Cor Beijersbergen

451. RE: [ferriterodantennaexperimenters] Site in the air

Yahoo group: ferriterodantennaexperimenters
Date: 2013-06-06 22:41:24 UTC
From: Chris Trask
Topic: 448 Message: 451

```
>
> >It's not in American! Can't read it. Is there am American version?
> >
> >Ernie
>
>
>Sorry Ernie, American is not a language.
>

<<SIGH>>

I blame society and the dysfunctional education system that created it.

Chris
```

452. Re: [ferriterodantennaexperimenters] Site in the air

Yahoo group: ferriterodantennaexperimenters
Date: 2013-06-06 22:47:20 UTC
From: Ernie Rice
Topic: 448 Message: 452

Awe but it is! If you live in France what do you spear? If you live in Germany what do you speak? If you live in Spain what do you speak? If you live in England what do you speak? If you are in America what do you speak?

Lol

Ernie

Sent from my iPhone

On Jun 6, 2013, at 18:41, Chris Trask <christrask@...> wrote:

> >
> > >It's not in American! Can't read it. Is there am American version?
> > >
> > >Ernie
> >
> >
> >Sorry Ernie, American is not a language.
> >
>
> <<SIGH>>
>
> I blame society and the dysfunctional education system that created it.
>
> Chris
>

453. Trying To Get Back Into This Group

Yahoo group: ferriterodantennaexperimenters
Date: 2013-11-04 12:27:29 UTC
From: <gccradioscience@...>
Topic: 453 Message: 453

I am having a tough time trying to get back into using this group again. With the dramatic change with the main group photo, Yahoo! ruined my other groups by putting these way off topic pictures. It's going to take time for me to get used to moderating these groups. Most of my time I am moderating Facebook groups which I need to take the time and recreate another group like this for Facebook members. I have not been winding any ferrite rods, because the price of magnet wire went up in price at the Radio Shack and I might reconsider buying it from Ebay or something and have a bigger spool of it. I wish Radio Shack would just take a dollar off their magnet wire. I mean what difference does it make being $8.99 for 3 small spools of magnet wire? I saw better deals online. Also getting the ferrite rods are getting expensive too. I need to get back to doing it again because I have some old radio kits that need ferrite rod antennas. So please be patient, the email is really reminding me. Even a member said "Is this group still open"? It's open, I just have not been active on it that much because of spending alot of time on Facebook.

454. RE: [ferriterodantennaexperimenters] Trying To Get Back Into This Group

Yahoo group: ferriterodantennaexperimenters
Date: 2013-11-05 05:24:18 UTC
From: dan m
Topic: 453 Message: 454

you can expect lower prices on eBay to radio shack. The only reason I would step into their store is when the item is needed today. If you need a small amount, check out hobbylobby (usually have 25%off 1 item coupon) or other craft store, though they do not carry lutz wire like eBay does.To: ferriterodantennaexperimenters@yahoogroups.com
From: gccradioscience@...
Date: Mon, 4 Nov 2013 04:27:29 -0800
Subject: [ferriterodantennaexperimenters] Trying To Get Back Into This Group

I am having a tough time trying to get back into using this group again. With the dramatic change with the main group photo, Yahoo! ruined my other groups by putting these way off topic pictures. It's going to take time for me to get used to moderating these groups. Most of my time I am moderating Facebook groups which I need to take the time and recreate another group like this for Facebook members. I have not been winding any ferrite rods, because the price of magnet wire went up in price at the Radio Shack and I might reconsider buying it from Ebay or something and have a bigger spool of it. I wish Radio Shack would just take a dollar off their magnet wire. I mean what difference does it make being $8.99 for 3 small spools of magnet wire? I saw better deals online. Also getting the ferrite rods are getting expensive too. I need to get back to doing it again because I have some old radio kits that need ferrite rod antennas. So please be patient, the email is really reminding me. Even a member said "Is this group still open"? It's open, I just have not been active on it that much because of spending alot of time on Facebook.

455. Re: [ferriterodantennaexperimenters] Trying To Get Back Into This Group

Yahoo group: ferriterodantennaexperimenters
Date: 2013-11-05 15:47:54 UTC
From: Andy
Topic: 453 Message: 455

Yahoo made the silly decision that EVERYTHING that was under the "Hobbies and Crafts" category, even if it was several levels down in Ham Radio, should have that silly basket picture. As if basket-weaving is what all hobbies are about. Well what do you expect from a bunch of bean-counters and programmers who don't know how to program worth the beans their bosses sit around counting.

Me, I just ignore the picture anyway.

And I do 99% of my Yahoogroup work in email where I don't need to put up with their awful website blunders.

I don't know how Powerwerx compares to ebay and other online sources, but they have bulk magnet wire with a pretty good range of sizes. One $15 half-pound spool should probably last a long time. But anything is better than prices at the Shaft ... er, Shack.

Andy

456. Ramsey Signal Magnet modifications

Yahoo group: ferriterodantennaexperimenters
Date: 2013-12-04 20:34:26 UTC
From: <kc7nj@...>
Topic: 456 Message: 456

I'm interested in seeing the files/photos of the modifications John Stumm posted in 2005. Nothing that new appears in the file section and am wondering where I might see them. Thanks in advance. Dave

457. Re: Ramsey Signal Magnet modifications

Yahoo group: ferriterodantennaexperimenters
Date: 2013-12-09 20:19:47 UTC
From: Les Rayburn
Topic: 456 Message: 457

I'd be very interested in seeing those as well. Could someone in the group e-mail them to me directly? I've owned and used the Ramsey Signal Magnet for some time now for AM DXing, and found it generally to be a poor performer. I'd love to do something to improve it's performance. Any recommendations?

--
--
73,

Les Rayburn, N1LF
121 Mayfair Park
Maylene, AL 35114
EM63nf

6M VUCC #1712
AMSAT #38965
Grid Bandits #222
Southeastern VHF Society
Central States VHF Society Life Member
Six Club #2484

Active on 6 Meters thru 1296, 10GHz & Light

458. Re: Ramsey Signal Magnet modifications

Yahoo group: ferriterodantennaexperimenters
Date: 2013-12-10 00:20:20 UTC
From: <kc7nj@...>
Topic: 456 Message: 458

You're not making my day Les, I just ordered one from Ramsey. With so little activity here I was beginning to think this group was moribund. Any idea what happened to the early files? Dave

459. Re: Ramsey Signal Magnet modifications

Yahoo group: ferriterodantennaexperimenters
Date: 2013-12-10 02:08:22 UTC
From: <gccradioscience@...>
Topic: 456 Message: 459

I was thinking about buying a Ramsey Signal Magnet, but when previewed the manual, it looked difficult to build and it required more magnet wire to make one for the long wave band. Also the price is kinda steep for me, but since I am buying a PL-880, I might be able to buy it since it does come with a case. I don't use Yahoo! Groups that much since it changed dramatically, I might be moving this group and all others to google and Facebook. Not right now, but in the far future.

Adam E.
gccengineering

460. Canabalizing uiop[Super 3 Rod

Yahoo group: ferriterodantennaexperimenters
Date: 2013-12-10 15:34:09 UTC
From: <dr_seamless@...>
Topic: 460 Message: 460

New member here.

I have 2 or 3 GE super three radios and was thinking of ripping out the ferrite rods and making portable medium wave, long wave, and tropical band antennas out of them.

Has anyone here ever done this, or have an idea of how to go about it?
Doesn't seem like it would be too difficult.

Thanks

461. RE: Ramsey Signal Magnet modifications

Yahoo group: ferriterodantennaexperimenters
Date: 2013-12-13 22:11:13 UTC
From: <lowalacrity@...>
Topic: 456 Message: 461

Dave,
I see the at the pics are deleted in the loopantenna group also. I plan on reposting them soon. See that group or cantact me. I sent Les some pics via smart phone.

John

462. RE: [ferriterodantennaexperimenters] Canabalizing uiop[Super 3 Rod

Yahoo group: ferriterodantennaexperimenters
Date: 2013-12-18 19:31:20 UTC
From: dan m
Topic: 460 Message: 462

you could rig 2, 3, or 4 in a star pattern, and use a switch to rotate though lipstick antenna for best signal, when rotating the radio is not an option.

You just re-string the loopstick with the proper inductor value, for the frequencys of interest.
To: ferriterodantennaexperimenters@yahoogroups.com
From: dr_seamless@...
Date: Tue, 10 Dec 2013 07:34:09 -0800
Subject: [ferriterodantennaexperimenters] Canabalizing uiop[Super 3 Rod

New member here.

I have 2 or 3 GE super three radios and was thinking of ripping out the ferrite rods and making portable medium wave, long wave, and tropical band antennas out of them.

Has anyone here ever done this, or have an idea of how to go about it?
Doesn't seem like it would be too difficult.

Thanks

463. RE: [ferriterodantennaexperimenters] Canabalizing uiop[Super 3 Rod

Yahoo group: ferriterodantennaexperimenters
Date: 2013-12-19 17:21:12 UTC
From: <dr_seamless@...>
Topic: 460 Message: 463

What I'm trying to figure out is that there are 4 different coils wrapped around the rod - a major (about 25 turn) coil in the center of the rod that appears to be split into another smaller coil further off center which connected to the pc board, then there's another small separate coil off on the right end that also went to the pc board that looks like a pic-up coil. Then there's a very small 3 turn coil on the left end that was for connection to an eternal long wire connection.

I'm connecting these in parallel to a 365pF variable cap to try to get MW resonance but only managed to get a little something from the upper end of the band.

Is it possible I have too much inductance for the 365?

464. Re: [ferriterodantennaexperimenters] Canabalizing uiop[Super 3 Rod

Yahoo group: ferriterodantennaexperimenters
Date: 2013-12-19 18:01:38 UTC
From: T. Hills
Topic: 460 Message: 464

My first post here.

I've been experimenting with antennas, ferrites included, since I was about 9 years old. A couple years back at least ;) I was also a Research Assistant for my EE Professor developing HF and ELF loop antennas for "An Educational Project for east Africa" (also a couple years back)

I salvaged the rod from an SR3 and built a varactor tuned MW rod for a remote antenna. Since your only getting the top end of the band that would mean you too little, not too much inductance.

I'm using 4 MVAM109s in series parallel with a max capacitance of 475 pF and 2 coils of 300/46 Litz center tapped in series centered about 2/3 out from the center giving ~165uH and a "low" frequency of 520 KHz. I use a variable padding cap to limit the upper Freq. to 1720 KHz. The padding cap makes tuning the upper end of the band easier.

For a 365 pF tuning cap (one side grounded) I'd suggest an 80 or so turn coil on a form that can be slid on the rod to fine tune it. To make the upper end easier to tune you might want to consider a 5-30pF trimmer cap parallel with the tuning cap.

Just my $0.02

Tim Hills
Sioux Falls, SD

On 12/19/2013 11:21 AM, dr_seamless@... wrote:
>
> What I'm trying to figure out is that there are 4 different coils
> wrapped around the rod - a major (about 25 turn) coil in the center of
> the rod that appears to be split into another smaller coil further off
> center which connected to the pc board, then there's another small
> separate coil off on the right end that also went to the pc board that
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> MW resonance but only managed to get a little something from the upper
> end of the band.
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> Is it possible I have too much inductance for the 365?
>
> _

465. Re: Canabalizing uiop[Super 3 Rod

Yahoo group: ferriterodantennaexperimenters
Date: 2013-12-20 14:26:08 UTC
From: Tom McKee
Topic: 460 Message: 465

Try the biggest winding alone first. If that doesn't do it try connecting the windings in series in the adding mode (so that they appear to the eye as one continuous winding). That will probably get you too low in the band so you probably won't need all the windings.

--
Tom McKee Twitter: @MacZad <https://twitter.com/MacZad>
==========
My Blog <http://www.maczads-musings.imradioha.org/> about things that matter.
Inland Marine Radio History <http://www.imradioha.org> GE Mobile Radio History <http://www.gemradioha.org>
Swing Music Broadcasts <http://swing-sked.wikispaces.com/> Joyce McKee's Art Gallery Page <http://www.fineartsleagueofcary.org/mckee.htm>

Progress doesn't come from the insular folks of the countryside; it results from myriad collaborations by the diverse inhabitants of cities.

.

466. Re: Canabalizing uiop[Super 3 Rod

Yahoo group: ferriterodantennaexperimenters
Date: 2013-12-20 16:17:48 UTC
From: <dr_seamless@...>
Topic: 460 Message: 466

My 365pF tuning cap is in what looks like an old MFJ antenna tuner, so I can switch in more inductance if needed, but adding even the max didn't seem to help. Does this kind of rig need a good earth ground to work right?

467. Anyone Have a Type 33 Ferrite Rod?

Yahoo group: ferriterodantennaexperimenters
Date: 2014-03-06 16:03:53 UTC
From: <kugellager@...>
Topic: 467 Message: 467

I am experimenting with 3" long/0.37" diameter type 61 ferrite rods for making a replacement internal antenna that is effective on LW for one of my Tecsun PL-380 and have had good results so far.

I can get about 2300 uH with the 30 awg magnet wire. Experiments by others have shown that 1900 uH has worked well at trying to make the PL-380 effective on LW. However, the specifications from the manufacturer for the Si4734 receiver chip in the radio indicates 2800 uH is typical for LW.

I want to test that inductance level but can't get that kind of inductance on the 3" Type 61 rod and don't want to go smaller than 30 awg wire so as not to decrease Q too much.

Does anyone have any 0.37 diameter type 33 rods that can close-wind a few (20-50) turns of 30 awg wire on it and measure the inductance? I suspect 2800 uH on a type 33 rod will be easy to achieve but I want to get an idea at how many turns it takes before I order some as they generally cost more than type 61 rods.

John
];')
Lakewood, Colorado
Tecsun PL-380 w/7.5" Loopstick
25' vertical inductively coupled to loopstick.
50' non-resonant "dipole" inductively coupled to loopstick.
http://www.youtube.com/watch?v=EDP-0FAl1JI&feature=share&list=PLCED329D32CFBDBBF
http://www.youtube.com/watch?v=EDP-0FAl1JI&feature=share&list=PLCED329D32CFBDBBF

468. Re: [ferriterodantennaexperimenters] Anyone Have a Type 33 Ferrite Rod?

Yahoo group: ferriterodantennaexperimenters
Date: 2014-03-06 17:14:36 UTC
From: John Popelish
Topic: 467 Message: 468

On 03/06/2014 11:03 AM, kugellager@... wrote:
>
>
> I am experimenting with 3" long/0.37" diameter type 61
> ferrite rods(snip)

> I can get about 2300 uH with the 30 awg magnet wire.
(snip)

> I want to test that inductance level but can't get that kind
> of inductance on the 3" Type 61 rod and don't want to go
> smaller than 30 awg wire so as not to decrease Q too much.
>
> Does anyone have any 0.37 diameter type 33 rods that can
> close-wind a few (20-50) turns of 30 awg wire on it and
> measure the inductance? I suspect 2800 uH on a type 33 rod
> will be easy to achieve but I want to get an idea at how
> many turns it takes (snip)

Before you get too enthralled with a particular inductance value, think a bit about how that inductance involves receiving EM waves. There are two components of the coil inductance. One involves the extended field, from the ends of the rod, that strongly interact with the external EM field. The other component is from closed loops of field that wrap very closely around the turns of the coil, in many cases, coupling only nearby turns. This component of the coil inductance is essentially in series with the inductance that receives energy from the external EM field. It is equivalent to adding a separate inductor in series with the antenna coil. It alters the resonant frequency of the antenna, without adding to the energy received from the EM field.

The higher permeability rod material will do more to increase the second component of inductance than it does to increase the first. This is because the fraction of the magnetic path around a few turns, very close to the rod has more ferrite in it than the extended magnetic field lines from the ends of the rod. So most of the added inductance it provides will not be signal receiving inductance.

You might receive more signal by increasing the first component by having more turns with a two layer coil. You can also decrease the second component by adding a bit of space between the coil and the rod. Low dielectric material

is best, to lower the capacitance between the turns and the rod, and each other.

Turns magnetically couple to their neighbors, wherever they are on the rod, but turns couple to the external EM field, most effectively, when they are on the middle third of the rod, where the end thirds use all of their surface area to collect the external field lines and concentrate them through that middle third.

If you make a two layer coil, double back to the start end and so both layers wind in the same direction. A thicker interlayer insulation with a low dielectric constant material will minimize the interlayer capacitance. Paper or foam is good (both mostly air).

What I am saying is that I doubt you have made best use of the rod you have.

--
Regards,

John Popelish

470. Re: [ferriterodantennaexperimenters] Anyone Have a Type 33 Ferrite Rod?

Yahoo group: ferriterodantennaexperimenters
Date: 2014-03-06 18:54:53 UTC
From: <kugellager@...>
Topic: 467 Message: 470

Thanks John for such a quick reply. It gives me other angles to consider and more experiments to try with the ferrite rods I have.

How thick should the dialectric layers be? A couple of layers of paper or packing tape thick?

John
];')
Lakewood, Colorado
Tecsun PL-380 w/7.5" Loopstick
25' vertical inductively coupled to loopstick.
50' non-resonant "dipole" inductively coupled to loopstick.

>>If you make a two layer coil, double back to the start end
and so both layers wind in the same direction. A thicker
interlayer insulation with a low dielectric constant
material will minimize the interlayer capacitance. Paper or
foam is good (both mostly air).

>>John Popelish

471. Re: [ferriterodantennaexperimenters] Anyone Have a Type 33 Ferrite Rod?

Yahoo group: ferriterodantennaexperimenters
Date: 2014-03-06 18:56:44 UTC
From: T. Hills
Topic: 467 Message: 471

John, and John,

When experimenting with rods in the past I found that for the same size rod the 33 material will take about 1/2 the turns of a 61 rod to get the same inductance. That's assuming the same placement of the windings on the rod, etc.

At MW/LW frequencies there would also be another component to consider, the resistance due to the skin effect if your using solid wire. Tuned and untuned ferrite loops both perform better with Litz type wire lowering the resistance in the windings and reducing (slightly) the distributed capacitance. 10/44 single layer Litz wire is about the same diameter as 30 Ga. solid and 20/44 isn't much thicker.

As John mentions below, a bit of space between the windings and the rod and keeping the turns close to the center will increase signal level and Q in a tuned rod. I use plain notebook paper (usually 2 wraps tightly wound) and a couple smears of fingernail polish to hold it together until the coil is wound between the rod and coil and between layers of the coil.

HTH
Tim Hills
Sioux Falls, SD

On 3/6/2014 11:14 AM, John Popelish wrote:
>
> On 03/06/2014 11:03 AM, kugellager@... wrote:
> >
> >
> > I am experimenting with 3" long/0.37" diameter type 61
> > ferrite rods(snip)
>
> > I can get about 2300 uH with the 30 awg magnet wire.
> (snip)
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> > I want to test that inductance level but can't get that kind
> > of inductance on the 3" Type 61 rod and don't want to go
> > smaller than 30 awg wire so as not to decrease Q too much.
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> > close-wind a few (20-50) turns of 30 awg wire on it and
> > measure the inductance? I suspect 2800 uH on a type 33 rod
> > will be easy to achieve but I want to get an idea at how
> > many turns it takes (snip)
>

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> value, think a bit about how that inductance involves
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> inductance. One involves the extended field, from the ends
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> that wrap very closely around the turns of the coil, in many
> cases, coupling only nearby turns. This component of the
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> increase the second component of inductance than it does to
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> from the ends of the rod. So most of the added inductance it
> provides will not be signal receiving inductance.
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> component by having more turns with a two layer coil. You
> can also decrease the second component by adding a bit of
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> is best, to lower the capacitance between the turns and the
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> Turns magnetically couple to their neighbors, wherever they
> are on the rod, but turns couple to the external EM field,
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> through that middle third.
>
> If you make a two layer coil, double back to the start end
> and so both layers wind in the same direction. A thicker
> interlayer insulation with a low dielectric constant
> material will minimize the interlayer capacitance. Paper or
> foam is good (both mostly air).
>
> What I am saying is that I doubt you have made best use of
> the rod you have.
>
> --
> Regards,
>
> John Popelish

>
>

472. Re: [ferriterodantennaexperimenters] Anyone Have a Type 33 Ferrite Rod?

Yahoo group: ferriterodantennaexperimenters
Date: 2014-03-06 21:33:56 UTC
From: John Popelish
Topic: 467 Message: 472

On 03/06/2014 01:54 PM, kugellager@... wrote:
>
>
> Thanks John for such a quick reply. It gives me other
> angles to consider and more experiments to try with the
> ferrite rods I have.
>
> How thick should the dialectric layers be? A couple of
> layers of paper or packing tape thick?

I think you are getting into diminishing returns after you go beyond about a wire diameter, unless you are dealing with spaced turns.

By the way, I just realized that you are building a device to transfer energy from a vertical antenna into a radio that already has a ferrite rod antenna. I read your post with images disabled, in my email reader.

So my discussion of EM fields is of questionable applicability. I thought you were building a rod antenna to replace the one that came with the radio. But some of it may apply. Good luck in your experiments.

--
Regards,

John Popelish

473. RE: Anyone Have a Type 33 Ferrite Rod?

Yahoo group: ferriterodantennaexperimenters
Date: 2014-03-07 14:05:32 UTC
From: <John@...>
Topic: 467 Message: 473

I've wound long-wave antennas using close-wound 0.2mm (=32awg) solid wire, and the Q's are up approaching 200. I'd stick with your 61 material, as it's more temperature-stable. To space the turns from the rod, use a heat-shrink sleeve to encapsulate the ferrite and then shrink it down directly. You should only require a single layer, centred as has already been mentioned.

John

474. RE: Anyone Have a Type 33 Ferrite Rod?

Yahoo group: ferriterodantennaexperimenters
Date: 2014-03-07 14:09:09 UTC
From: <John@...>
Topic: 467 Message: 474

PS the difference (reduction) in turns to achieve c 2.8mH going from 61 to 33 is c. 20 to 25.

475. RE: Anyone Have a Type 33 Ferrite Rod?

Yahoo group: ferriterodantennaexperimenters
Date: 2014-03-07 17:10:00 UTC
From: <kugellager@...>
Topic: 467 Message: 475

You all have given me several things to consider.

First off, I apologize for the video link in my original post. I did not realize that putting it in my signature line that it would actually embed it into my post in this new Yahoo format. It was kind of obnoxious.

Those of you who did look, it does show mostly what my intended final use will be. The diagram differs only in that the ferrite rod will be internal to the radio. My original antenna mod for the PL-380 was a 7.5" external ferrite rod commonly used in the Ultralight community. I quickly discovered that I prefer to inductively couple an external low-noise wire vertical in my portable setup and so the external 7.5" antenna became cumbersome to travel. For MW, I experimented quite a bit with using small toroid transformers to match the signal levels obtained by inductively coupling to the 7.5" ferrite antenna. I got close on some parts of the band but not close enough overall. As a last ditch effort, I tried using the previously removed stock ferrrite antenna to inductively couple the external antenna and found that it gave equal or superior signal levels to the 7.5" antenna. So I bought a second PL-380, added a 1/8" phono jack and 6 turn inductive coupling coil to the internal antenna. All was good. However the PL-380 has low sensativity in the LW band and now I had a second radio with the stock antenna already removed....which brings us to where I am now.

So my intentions are to make an INTERNAL ferrite rod antenna aimed that has superior performance to the stock antenna on LW AND add the coupling coil, and 1/8 jack, as I have with my other radio, to allow the connection of the external antenna. This is why I have been experimenting with the 3" type 61 rod as it fits perfectly the same spot as the stock antenna. The results with my quickly cobbled together type 61 rod were promising as I saw about 10 dB signal increase on two local NDB at 260 and 400 kHz. The 3" type 61 rod is giving me about 2110 uH with about 220 turns (guesstimate) of 30 awg magnet wire. Experimentation by others has shown that 1700-1900 uH is good for NDB band and manufacturer specifications for the tuner chip recommends 2800 uH for the LW BCB of which I am most interested.

So I want decent performance on LW w/o the external antenna connected as this will allow excellent signal transfer when I use it with the inductive coupling of an external antenna. With the MW version of the radio, LW performance increases very little with the external antenna which itself is setup for MW/LW for my other DX'ing work.

With all of your suggestions I think I will try multi layer windings on the 61 rod and get some type 33 rods to try as well as they are better for the LW frequencies I am interested in.

John
];')
Lakewood, Colorado
Tecsun PL-380 w/7.5" Loopstick
25' vertical inductively coupled to loopstick.

50' non-resonant "dipole" inductively coupled to loopstick.

476. RE: Anyone Have a Type 33 Ferrite Rod?

Yahoo group: ferriterodantennaexperimenters
Date: 2014-03-07 23:07:04 UTC
From: <John@...>
Topic: 467 Message: 476

As I said before, if you use heat-shrink over the rod, I doubt you'll need more than c 170 turns close-spaced 0.2mm /32awg. That occupies c 40mm of the rod: no need for multi-layer on the type 61.

477. Inductive Coupling - Best Placement?

Yahoo group: ferriterodantennaexperimenters
Date: 2014-03-25 15:44:29 UTC
From: <kugellager@...>
Topic: 477 Message: 477

I have been experimenting in constructing my own type 61 and 33 ferrite rod antennas for LW BCB use inside my Tecsun PL-380 and will be adding a inductive coupling loop to enable me to attach and external vertical/longwire/etc. antenna via a 1/8" phono jack.

I have added indictuve coupling loops to the stock ferrite rod antennas before and have just placed them on the end of the rod as close as I could get them to the original windings for strongest signal. Since I am making my own internal ferrite rod antennas I want to include the inductive coupling from the beginning. What is the best location to place the 6-turn inductive coupling?

1 - On the open end of the rod as I have with stock ferrite antennas?
2 - In the center of the rod and interwound with the primary winding?
3 - In the center but over the top of the primary winding?
4 - Some other location/combination of winding techniques?

Note: The primary winding is about 125 turns 30 awg wire centered on a 3" x 0.37" ferrite rod. There is about 3/4" of bare rod remaing on each end after the primary winding is wound.

Thanks,

John
];')

478. Re: [ferriterodantennaexperimenters] Inductive Coupling - Best Placement?

Yahoo group: ferriterodantennaexperimenters
Date: 2014-03-25 16:07:49 UTC
From: Chris Trask
Topic: 477 Message: 478

```
>
> I have added indictuve coupling loops to the stock ferrite rod antennas
> before and have just placed them on the end of the rod as close as I
> could get them to the original windings for strongest signal. Since I
> am making my own internal ferrite rod antennas I want to include the
> inductive coupling from the beginning. What is the best location to
> place the 6-turn inductive coupling?
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> 4 - Some other location/combination of winding techniques?
>
> Note: The primary winding is about 125 turns 30 awg wire centered on
> a 3" x 0.37" ferrite rod. There is about 3/4" of bare rod remaing on
> each end after the primary winding is wound.
>
```

#3 would work well and is the easiest to implement. An alternative would be to place the coupling winding on the rod at the centre and then spl;it the primary and wind it to both sides of the coupling winding.

Chris Trask
N7ZWY / WDX3HLB
Senior Member IEEE
http://www.home.earthlink.net/~christrask/

479. DIY Ferrite antenna winding machine

Yahoo group: ferriterodantennaexperimenters
Date: 2014-06-20 01:20:33 UTC
From: compufriend3@...
Topic: 479 Message: 479

Hi Everyone,

I just completed a project where I needed to wind a ferrite antenna. Way too much to do good by hand. This winding machine was invented to do the job. The completed working model is on my pages at this link. It uses an Arduino UNO board, code, and common items you can obtain easy. This can run unattended for hours to do big core ferrite antennas that has a lot of wire to be wound. This one wound 24 miles of wire for me with little attention except to change wire spools.. This can be duplicated or redesigned for your own use and still use the code, and basic ideas regardless of the size of the machine. This just happened to be a pair of very large ferrite antennas for receiving the Schumann Resonance signals on 7.8 Hz for Q-burst plotting. All schematics and code is provided for a DIY project.

Gerry, WB5TXA

San Antonio Weather http://lrsatx.com/

http://lrsatx.com/

San Antonio Weather http://lrsatx.com/ SAN ANTONIO, TEXAS WEATHER Davis Vantage Pro2 Plus 6163 Weather Station FORECAST RADAR Photo credit: NOAA Satellite credit: USA Ta...

View on lrsatx.com http://lrsatx.com/
Preview by Yahoo

480. near-field magnetic inductive communication

Yahoo group: ferriterodantennaexperimenters
Date: 2015-03-23 15:18:52 UTC
From: danielkalny@...
Topic: 480 Message: 480
Attachments: 2 described; binary payloads are missing from this source WARC

Hello everybody,

I'd like to ask you who are more experienced with ferrite antennas and LF transmissions for a help with the following problem. I have a circuit for near-field magnetic inductive communication consisting of a microcontroller generating a square-wave signal (carrier, 131 kHz). An amplitude modulation (on/off keying) is used for the communication. A schematic is given in the figure 1 (schematic_transceiver.png). The signal is fed into a non-inverting op amp U1A. The output from the op amp drives a series LC circuit, the inductor L1 being a ferrite antenna. Receiver is similar in that it is a parallel LC circuit whose output is fed to another op amp U1B. Both op amps have an asymetric power supply (Vdd = 1.8V and GND).

The signal transmitted is a pulse of 128 cycles of the carrier frequency. A received signal is shown in the figure 2 (signal.png). The horizontal axis correspond to samples taken by an ADC. The vertical one is an arbitrary number corresponding to voltage (the higher the number on the axis the lower the voltage; GND = 5450, Vdd = 3500). The signal is rectified by the second op amp, therefore it is a half sine wave. I would expect to see an envelope of the received signal similar to the transmitted one (a square pulse) except for an exponential attack and decay of the envelope. However, as can be seen in the figure, there are other oscillations at roughly 1/12 of the carrier frequency, mainly at the beginning of the pulse. Could anybody provide an explanation of the fenomena and/or suggest what should I do to remove/decrease these dramatic changes in the amplitude of the envelope? Any suggestion is welcome.
Thank you.

481. Re: [ferriterodantennaexperimenters] near-field magnetic inductive communication [2 Attachments]

Yahoo group: ferriterodantennaexperimenters
Date: 2015-03-23 16:29:13 UTC
From: John Popelish
Topic: 480 Message: 481

On 03/23/2015 11:18 AM, danielkalny@...
[ferriterodantennaexperimenters] wrote:
> [Attachment(s) <#TopText> from danielkalny@...
> [ferriterodantennaexperimenters] included below]
>
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> A schematic is given in the figure 1
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> circuit whose output is fed to another op amp U1B. Both op
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> except for an exponential attack and decay of the envelope.
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> mainly at the beginning of the pulse. Could anybody provide
> an explanation of the fenomena and/or suggest what should I
> do to remove/decrease these dramatic changes in the
> amplitude of the envelope? Any suggestion is welcome.
>
> Thank you.

It appears that something in the circuit is resonant at a
much lower frequency that the carrier. Can you check the
voltage at C1, to check if the transmitter tank is mis tuned
and at the input of the receiver opamp to see if the

receiver tank is mis tuned.

--
Regards,

John Popelish

482. Re: near-field magnetic inductive communication

Yahoo group: ferriterodantennaexperimenters
Date: 2015-03-24 20:22:40 UTC
From: John@...
Topic: 480 Message: 482

You don't mention your sampling frequency: could this be an alias? I'd be inclined to use an analogue oscilloscope to look at the Tx and Rx waveforms seperately. Also, why are you using very high value feedback resistors? At this frequency I'd be inclined to drop them by at least a factor of 10.

John

483. Re: near-field magnetic inductive communication

Yahoo group: ferriterodantennaexperimenters
Date: 2015-03-29 18:12:19 UTC
From: danielkalny@...
Topic: 480 Message: 483

HI John, the sampling frequency is approx. 8 samples per carrier period, which is about 1 MHz.The traces measured with an analog oscilloscope are shown in my previous post. Value of feedback resistors was set so high without any particular reason (I'm not very much experienced with analog circuits). I can check to use lower values. Do you think that this could be the reason for these "slow" oscillations?

484. Re: [ferriterodantennaexperimenters] near-field magnetic inductive communication [2 Attachments]

Yahoo group: ferriterodantennaexperimenters
Date: 2015-03-29 18:21:56 UTC
From: danielkalny@...
Topic: 480 Message: 484
Attachments: 3 described; binary payloads are missing from this source WARC

Hi John, thank you for your suggestion. I did take some pictures of oscilloscope traces of a transmitted and received signals. The TX signal (tx.png) is taken between L1 and C1. RX signals are taken at the U1B non-inverting input (rx1.png) and its output (rx2.png). Quality of the pictures is not excellent but the overall shape is clearly visible. My understanding is that something is wrong with the receiver. What would you suggest?

487. Re: [ferriterodantennaexperimenters] near-field magnetic inductive communication [3 Attachments]

Yahoo group: ferriterodantennaexperimenters
Date: 2015-03-29 23:24:45 UTC
From: John Popelish
Topic: 480 Message: 487

On 03/29/2015 02:21 PM, danielkalny@...
[ferriterodantennaexperimenters] wrote:
> [Attachment(s) <#TopText> from danielkalny@...
> [ferriterodantennaexperimenters] included below]
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> Hi John,
> thank you for your suggestion. I did take some pictures of
> oscilloscope traces of a transmitted and received signals.
> The TX signal (tx.png) is taken between L1 and C1. RX
> signals are taken at the U1B non-inverting input (rx1.png)
> and its output (rx2.png). Quality of the pictures is not
> excellent but the overall shape is clearly visible. My
> understanding is that something is wrong with the receiver.
> What would you suggest?

I would start by paralleling the receive tank with various
resistors, to reduce its Q and broaden its bandwidth. You
may be able to pick a value that has a satisfactory
compromise between signal strength and envelope fidelity.

But, first, I think I would try adding a variable capacitor,
in parallel, (possibly with a lower value of tank capacitor,
to get a usable range) to see if the tuning could be peaked,
first. The receive tank is a lot more critical in its
tuning than the transmitter tank, because the output
impedance of the transmitter amp is inside the transmitter tank.

--
Regards,

John Popelish

488. Ferrite Transmitting Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2015-10-11 00:10:48 UTC
From: mrmabs@...
Topic: 488 Message: 488

Apologies for the long post...

I have been playing with using a ferrite loop as a transmitting antenna, and I wanted to share what I have done and what I have found, and to see if anyone had suggestions for moving forward. The design uses fairly heavy wire (about 1mm dia) wrapped around a 5x12x40mm ferrite slab from the local electronics store. I had read about keeping the impedance down, and that's why I used the heavy wire. I worked out that 16 turns should be good for impedance, and has a reasonable amount of room per turn, which was easy to work with on lower half of HF. I thought that I was going to get an impedance of 16.6uH, but I got closer to 8.9uH, but I still need to verify that as the permeability may be rapidly dropping off at the higher frequencies.

The basis of the circuit is a simple tank circuit, with the transceiver feed tapped onto the first few turns on the coil. This leaves the top (hot side?) of the tank circuit not connected to anything else.

I have only really been using the FT-817 as the transmitter at 5W. Pretty much all activity has been on 7MHz, and that is likely to be the frequency this particular design works best at, as I haven't had much luck on other bands. Receive performance drops off over about 10 MHz and frequencies below about 2.5 MHz aren't particularly affected by the tuned circuit (even if I change the tap point). The design does not appear to be effected by direction except for nearby noise sources.

Static crashes sound very different using the ferrite loop, and as I have not played with other loops, I don't know if this is a common thing with loops. They are quite pronounced compared to other signals, but also somewhat muffled. I am also not sure if these static crashes are city noise or not, as I have only taken the loop away from home once and the crashes weren't as frequent at the time. I live near some fairly large commercial premises.

Using JT65 / JT9 / WSPR on 7MHz I am hearing stations up to 16,000km away. I took the loop up an isolated hill a few weeks ago and put up a half wave dipole as well to compare, the difference for an SSB signal was S1 vs S8 on the 817. If the 817 is calibrated relative well, that puts it in the region of about -50dB below a dipole.

On transmit the other station above couldn't hear me with the loop, but he mentioned some local noise. The only contact I have had was on JT9 where my signal was -27db, 700km away.

I decided to add a few meters of wire to the top of the tank circuit for a quick RX test, and the industrial noise level at home makes it virtually impossible to use, it seems to pick up more noise than a 1/4 wave vertical. It has been suggested that I should put a few loops of wire around the ferrite to couple it to the antenna, rather than a direct connection, but I will need a longer ferrite for that.

So that's where I am up to, any suggestions to optimise this design? I am going to see if I can get a 180mm long ferrite rod, and vary the number of turns and the tap to see of that changes the performance on different bands. I have seen suggestions of sticking rods end to end to improve performance as well in this group, might give that as go as well.

489. Re: Ferrite Transmitting Antenna

Yahoo group: ferriterodantennaexperimenters
Date: 2015-10-11 00:22:58 UTC
From: mrmabs@...
Topic: 488 Message: 489

Oops, that should be keeping the loop resistance down.

On impedance, should I look towards getting the optimal impedances to any particular point? Sure I can get the SWR to 1:1 and the RX noise to maximum. The current tap reactance is about 50 ohms at 7.1 MHz.

490. Stacked toroid ferrite loop antenna with Paloar Amp

Yahoo group: ferriterodantennaexperimenters
Date: 2017-05-01 20:03:08 UTC
From: lowalacrity@...
Topic: 490 Message: 490

I have listed on Ebay my STFL and Palomar Amplifier. I modified the loop to be a plug-in for the Palomar. It works quite well on both LW and MW. A lot of buzz on it here years ago. I'm throwing in a stock 160/80 meter head as well. I hate to part with it but my current interests lie in Ham Radio. Search Palomar Amplified Loop Antenna. Thanks, John KG6ZBN

491. Help indentifying a ferrite material

Yahoo group: ferriterodantennaexperimenters
Date: 2017-08-09 03:07:07 UTC
From: hillfox@...
Topic: 491 Message: 491

Bit off topic, but I recently came across what appears to be a sample of a large torroidal core: 91 x 50 x 25mm bearing the label 5G3 Material. No manufacturer specified. From the number sequence, I would guess Ferroxcube / Phillips but none of my catalogs list it and an email to Ferroxcube didn't bring results.

Has anyone run into this material; it might have been a custom formulation or a potential product intro.

Thanks,
JM

492. Items For Sale

Yahoo group: ferriterodantennaexperimenters
Date: 2017-08-13 14:55:43 UTC
From: everettsharp@...
Topic: 492 Message: 492

Guys,
I am selling everything to do with FSLs and loop antennas. Below is a list of what I have for sale. If interested in any of the items listed please contact me at everettsharp@aol.com
If someone is interested in it all, as a package, or several items, let me know and we can work up a price. Everything on the list is new, with the exception of the ferrite bars, however, they are the same as new, but have been used in many experiments.
You can no longer find the ferrite bars, or the Russian Variable capacitors on eBay, they are long gone.

265- 62 X 12 X 4 mm Russian Ferrite bars $170, which includes the shipping
1- High Q Russian 3 gang, 3:1 turns ratio, Variable Capacitor 470/470/470 pF $45 plus shipping
2-High Q Russian 2 gang, 3:1 turns ratio, Variable Capacitors 380/320 pF $30 each plus shipping
1-High Q Russian 2 gang, 3:1 turns ratio, Variable Capacitor 505/480 pF $35 plus shipping
2- 3 gang Variable Capacitors 480/480/480 pF $35 each plus shipping
1- 2 gang Variable Capacitors 480/480 pF $30 plus shipping
2- 1 gang Variable Capacitor 390 pF $20 plus shipping

Everett N4CY

493. Re: Items For Sale

Yahoo group: ferriterodantennaexperimenters
Date: 2017-08-13 15:58:47 UTC
From: everettsharp@...
Topic: 492 Message: 493

Ferrite bars are sold